Publication Indicators for Science in India Based on International Databases

PART 2

Physics Research in India : An Analysis Based on *Physics Abstracts* 1992

Subbiah Arunachalam
Central Electrochemical Research Institute
Karaikudi 630 006, Tamil Nadu, India
and
S M Dhawan
National Physical Laboratory
New Delhi 110 012, India

Submitted to
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Dedicated to the memory of
the late Professor Michael J Moravcsik,
physicist and scientometrician par excellence,
who was a friend of science in the Third World

About the author

Subbiah Arunachalam is a consultant in the areas of Science and Technology Policy, Information Access, and Writing (both technical and business). Currently he is a Distinguished Fellow in Information Science at the M S Swaminathan Research Foundation, Madras, and a part-time Visiting Professor at the Indian Institute of Technology, Madras, in the Department of Humanities and Social Sciences.

He is an editor of scientific and technical journals, science writer and information scientist. He played an important role in the founding of *Pramana, Journal of Physics*, of which he was the first executive editor, and had contributed substantially to the growth of Indian Journal of Technology. He was with the Indian Academy of Sciences for two years in the early Seventies, where he was editor, secretary, manager, all rolled into one. He is a member of both the Indian and the International Science Writers Associations, and the Indian correspondent of *Higher Education and Development* (Bonn, Germany).

His research interests include science studies, scientometrics, information access, and knowledge flows and he is especially known for his work on science in the developing countries. His work has appeared in *Scientometrics*, *Journal of Information Science*, *Current Science*, *Journal of Scientific and Industrial Research*, *Knowledge and Policy*, *The Scientist*, *Science Today*, *Science Age*, *Science Reporter* and in many newspapers.

Arunachalam is on the editorial boards of many refereed journals. These include: *Scientometrics* (Budapest), *Journal of Information Science* (London), *Current Science* (Bangalore), JISSI - International Journal of Scientometrics and Informetrics (Calcutta), and *Public Understanding of Science* (London). He is also on the editorial board of *Current Contents*, PCES edn (Philadelphia), and the *Indian Journal of History of Science*. He has delivered invited talks in about 20 international conferences and chaired sessions in half a dozen conferences.

The author would welcome comments and criticism which may be forwarded to:

Subbiah Arunachalam
Visiting Professor
Dept of Humanities and Social Sciences
Indian Institute of Technology
Madras 600 036, India

< arun@indy.iitm.ernet.in >

FOREWORD

Scientific research is often deemed complete, when the results of the investigations are published appropriately for the benefit of the user community. Indeed, at least in basic sciences, the cost of publishing research is often absorbed by the sponsors of research in the form of page charges levied by the journals of professional society. European publishing houses recover the cost of publications from the user community - mainly professional libraries. In applied sciences the cost is paid for by the advertisers. In all the three options no matter who pays for it the main emphasis is that the scientific investigation reaches the scientific community for their next step. This takes the shape of internal reports (distributed informally among the peers), publications in professional journals or even as documents that lead to patents and instruments for commercial utility.

Whether it be basic sciences, where largely individual effort contributes or application oriented sciences, where scientific and technological teamwork is involved, a precise assessment of where their work is published as well as what impact they have generated in the field are important parameters. These are matters of interest not only to the working scientist, but also to the community that funds the research. The Department of Science & Technology (DST) of the Government of India is one of the major sources of funding of scientific research and it is natural that they have sponsored the study of this analysis of Indian scientific effort.

Shri S Arunachalam has undertaken this task analysed the data on all 1992 publications in Physical Sciences in order to collate those publications by Indian authors from Indian Institutions. I understand that he should be making similar analysis in other disciplines and use larger databases spending many years and thereby further add insight to the present analysis.

I should like to commend both Shri Arunachalam for the systematic and painstaking analysis and DST for their support. Shri Arunachalam with his editorial experience in Pramana - the journal of Physics of the Indian Academy of Sciences and the Indian Physics Association as well as a number of journals of the CSIR family, is most knowledgeable for the task he has undertaken. I expect that such a study will reveal to the scientific community about the status of the Scientific publication of Indian science. Such information is indeed vital to all organs of science for ensuring the rightful place for Indian sciences.

R.RAMACHANDRAN
Director
Institute of Mathematical
Sciences, Madras.

Preface

Physics research has enjoyed a special status in India, unmatched by research in other fields of basic science, largely thanks not only to the great and truly world class contributions made in the early decades of the century by men like C V Raman, K S Krishnan, Meghnad Saha and Satyen Bose, but also because of their towering personalities. In Independent India, both Dr Homi Bhabha and the Department of Atomic Energy had enjoyed an unmatched status. In more recent times, till the emergence of Prof. C N R Rao, it was mostly physicists who were close to the power centres in Delhi and who had a say in matters of policy. Indeed two physicists even enjoyed the status of ministers in the Union cabinet, even if only for a short period.

Even more than the advantages accruing through the proximity of the leaders to the power centres, one other factor, viz. the bench-level physicists' catholicity, has helped the field acquire a special status. By catholicity we mean their penchant for being open to interaction with physicists in the rest of the world, their keenness to publish their work in mainstream international journals, and their participation in world-wide networks of invisible colleges and informal information groups. Of course, the pre-eminent position enjoyed by physics and physicists in a nation's scientific enterprise is not unique to India. Till recently, till the emergence of new biology, biotechnology/genetic engineering, it was virtually the age of physics in most scientifically advanced countries. As pointed out by Prof. Sudhanshu Jha of the Tata Institute of Fundamental Research, "the future of physics and science seemed to be great, at least till the beginning of the 70s" and "Physicists were everywhere, and they were treated with respect by the society and the Government" [in his chapter on 'Physics and development' in the INSA Status Report on Physics in India, 1994].

A few years ago, in collaboration with Mr Udai Narayan Singh of the Birla Institute of Technology, Mesra, Ranchi, I had looked at India's contribution to many high-tech areas of physics -- lasers, holography, liquid crystals and (pre-high T_c) superconductivity. The entire data was collected manually from the printed version of *Physics Abstracts* and *Science Citation Index* by Mr Singh! Deservedly, he won a doctorate for his meticulous work. We were sorry that we could not look at India's contribution to all of physics, as the task would have been too laborious. Fortunately, a few years ago *Physics Abstracts* became available in CD-ROM format and the National Physical Laboratory had acquired the discs from 1990. And when the

Department of Science and Technology came forward to fund this project, I requested my friend S M Dhawan, Head of the NPL Library, to lend me the bibliographic data on all papers from India indexed in *Physics Abstracts*. He not only gave me the data but also helped me in the analysis.

In this report, we have examined, using bibliographic information obtained from INSPEC's *Physics Abstracts* database (CD-ROM version for the year 1992), India's contribution to the world literature of physics. Our study, especially when we publish similar analysis for a few more years, say *Physics Abstracts* 1990-1995, would complement the Status Report on Physics published by the Indian National Science Academy as one of a series of the Academy's Diamond Jubilee publications. The INSA report is compiled by experts in several areas of physics and has succeeded, to a large extent, in capturing the major developments in physics research in India in recent years, and in providing some insights into the quality of work done in India. Our report, prepared by two information professionals, aims to provide quantitative information based on publication counts, institutions involved, journals used, impact factors of these journals, subject classification of the papers, etc. We have deliberately refrained from making explicit statements on the quality of work performed.

We believe such exercises are important, especially in a developing country, where scarce resources are deployed for scientific research. These can lead to an understanding of India's strengths and weaknesses and can be useful in the efforts to build endogenous research capabilities. Such scientometric mapping exercises are now carried out in the UK, Australia and the Netherlands. Organisations such as the National Science Foundation in the United States, the Observatory of Science and Technology in France, and the European Union have built up considerable expertise to carry out such studies.

We thank the Department of Science and Technology, Government of India, for financial assistance. Mr G S Sridhar assisted in the preparation of the tables. I owe a special word of thanks to Prof. G V Subba Rao, Director, Central Electrochemical Research Institute, for the encouragement he gave me to pursue my scientometric studies. Prof. E S Raja Gopal, Director, National Physical Laboratory, has always been interested in my work. In fact, he was an examiner of Mr Singh's doctoral dissertation.

Subbiah Arunachalam

Abstract

This study aims to look at the state of health of physics research in India as reflected by the literature. We look at the volume of research done in terms of number of papers published, the journals used, the institutional and geographical distribution, and the use of journals from different countries. Besides, we have also looked at the impact factors of the journals used and identified the institutions often publishing in high impact journals as well as subfields in which high impact journals have been used often. India, as seen from *Physics Abstracts* 1992, accounts for 2.76% of the world's literature output in physics (and related fields), and stands tenth in the world. China, with 3.52% (6th rank), and Canada, with 2.91% (8th rank), are ahead of India. In all, there are 113 non-journal items and 4,606 journal papers published in 38 Indian and 482 foreign journals by scientists working in about 440 Indian institutions. Fifteen of these journals have carried 50 or more papers from India, and 150 journals have published one paper each. Over 8% or 376 of these papers are published in 22 journals with impact factor, as seen from *Journal Citation Reports 1992*, greater than 2.5. Here again the distribution is skewed, with only a few institutions like Indian Institute of Science and Tata Institute of Fundamental Research publishing a sizeable number. Unlike in most other fields, in physics Indian researchers have published a larger number of papers in British journals than in American journals. Indian researchers had used 34 letters journals like *Solid State Communications* and *Chemical Physics Letters* to publish 546 papers. While Indian physicists publish often in letters journals, they seem to be reluctant to write review articles. Higher educational institutions published 63% of all the papers, and the laboratories under the Department of Atomic Energy, Council of Scientific & Industrial Research and the Department of Science and Technology were responsible for about 32% of the papers. Indian Institute of Science, Bhabha Atomic Research Centre, and Tata Institute of Fundamental Research are the leading contributors. Among cities, Bombay, Calcutta, Delhi, and Bangalore together account for 40% of India's output. In terms of number of papers, Indian researchers were active in materials science (3.46% of the world output) and condensed matter physics (about 3.25% of the world output). Other subfields of considerable publishing activity are aeronomy, space physics and cosmic rays (over 5% of the world output), energy research and environmental science (4.24%), relativity and gravitation (4.32%), and mechanics, elasticity and rheology (4.45%).

Introduction

What exactly is going on in physics research in India? That is a question worth answering. But how does one go about it? There are at least two ways of doing it: Go and ask the experts or search the literature.

The Indian National Science Academy adopted the first alternative. It commissioned many experts to report on recent achievements of Indian physicists and brought out a status report in September 1994 under the editorship of Sudhanshu S Jha of the Tata Institute of Fundamental Research. The report was part of a series of status reports on different subjects (such as space research, theoretical and applied mechanics, and solar terrestrial effects) brought out by the Academy to mark its Diamond Jubilee. The contributors included, among others, Jayant Narlikar (astrophysics), E S R Gopal (acoustics), Virendra Singh (particles and fields), T V Ramakrishnan (structure and dynamics of condensed matter) and G K Mehta and C S Warke (nuclear physics). The report has 20 chapters. The intention of the report was to provide a "broad perspective of activities in the country in different areas of physics". According to Prof. Jha, "as far as physics research and education are concerned, the present activity is at a fairly good level, and many exciting developments are taking place at various institutions in the country." What was important about the report was the inclusion of a chapter on 'physics and development' by the editor, who had also drawn attention, in his preface, to the questions being raised on government funding of research.

The halcyon days when research was thought to be inherently good and deserved to be funded with no questions asked are over. The world over people in general and policy makers in particular are asking for returns from investments in research, and except in Japan, funding for research, especially in physics, is on the decline. The attention now is focused on 'accountability' and 'relevance'.

But before one can talk of accountability and relevance one needs to have authentic data on what is being done in India. This is precisely what we have attempted to do here by looking at the literature of physics. While the INSA report has attempted, with considerable success, to give an overview of and assess Indian achievements in different areas of physics in recent years, what we have done is to generate quantitative indicators based on publication counts, subfield classification of these papers, publishing institutions, institution types, cities and states where these institutions are located, journals used, their

country of origin and impact factor, the extent of use of letters journals, etc. We have also attempted to quantify the use made of high impact journals by Indian physicists and the geographic distribution of physics research in India. The entire study is based on INSPEC's *Physics Abstracts* database, CD-ROM version, for the year 1992. We are extending this analysis to cover *Physics Abstracts* 1990-1995.

In our opinion, such 'mapping' exercises, together with the peer judgement (as obtained in the INSA report), can be of great help to science policy makers and researchers in the area of science studies. Not only can we measure the amount and nature of research produced in India and the geographic and institutional distribution of physics research output, but also compare them with other countries and see in what ways the physics research agenda in India differs from that in other parts of the world. Other pertinent questions include: Can such studies help in improving procedures of funding research, and prioritising research programmes? Can they help us understand the innovation process in the Indian context? Can we use them in programmes of "capacity building"? Are we doing research relevant to our needs? Why are not Indian companies investing in scientific research, as AT&T, IBM, Philips and SmithKline Beecham do? Neither the enormity of these questions nor the difficulty in forging the links between the data that we can access and the answers we must ultimately arrive at should deter us from making an honest effort.

Methodology

We downloaded bibliographic information on all papers originating from India and abstracted in INSPEC - *Physics Abstracts* CD-ROM database for the year 1992. As the software used by the publishers does not permit downloading more than a specified number of documents at a time, we devised some ingenious steps to capture all papers with a first author Indian address in the by-line. Incidentally, *Physics Abstracts* provides only one address in each abstract it includes. The information downloaded include:

Author names with initials
Address of first author (institution, city, etc.)
Document type
Language
Treatment
Journal title (with volume, year, page number)
Country of Publication

Classification numbers
ISSN and Coden

We added, wherever possible, the impact factors for journals from *Journal Citation Reports* 1992. The data were tabulated for ease of analysis. We developed the necessary computer programs using FoxPro version 2.5.

Analysis

Physics Abstracts 1992 had covered 4719 documents from India. These included 4260 journal papers and 346 conference papers which were also published in journals. Besides there were 105 conference papers (not published in journals) and eight book chapters (Table 1). But for one paper in Russian, all others were in English.

Journals used - Indian researchers had used 520 journals to publish 4,606 papers indexed in *Physics Abstracts* 1992. These are listed in Table 2 along with their impact factors and country of publication. Indian authors had published 50 or more papers in each of 15 journals. These included 5 titles published in India, three each published in the UK and the USA and two from the Netherlands. Indian authors had published 20-49 papers in each of 48 journals. At the other extreme, they had published only one paper in each of 150 journals, and two papers each in 87 journals. A plot of log number of journals Vs cumulative number of papers leads to the classical sigmoidal curve (Fig.1). Three of the 10 most often used journals are materials science journals, viz. *Journal of Materials Science Letters*, UK (rank 1; 116 papers), *Bulletin of Materials Science*, India (rank 3; 110 papers), and *Journal of Materials Science*, UK (rank 9; 73 papers). Four others in the top 13 journals are devoted to condensed matter physics, viz. *Physical Review B*, USA (rank 4; 109 papers), *Solid State Communications, USA* (rank 7; 81 papers), *Journal of Physics C: Condensed Matter*, UK (rank 10; 51 papers), and *Physica Status Solidi B*, Germany (rank 13; 51 papers). In all, Indian researchers had used 22 high impact journals (*JCR* 1992 impact factor greater than 2.500) to publish 349 papers or about 7.5% of the 4,606 journal papers.

Use of letters journals and review journals -- Indian researchers had used 34 letters journals to publish 546 papers or a little over 11.8% of all journal articles (Table 3). Besides, some of their papers in *Current Science* could be letters too. *Journal of Materials Science Letters*, UK, and *Solid State Communications*, USA, are the preferred

letters journals. There were 19 papers in *Physical Review Letters* and 40 in *Chemical Physics Letters*. Indian physicists had not published many review articles. There were two papers in *Physics Reports* and one in the *Journal of Scientific & Industrial Research*. *Reviews of Modern Physics* (1992 impact factor 14.071), *Contemporary Physics* (1.541), *Advances in Physics* (8.667), etc. do not figure in the list of journals used by Indian physicists. Review articles help consolidate developments in a field and also, in general, tend to be cited more often than the regular research papers. Dr Anil Kumar of the Department of Physics, Indian Institute of Science, tells us that his review article on critical point phenomena has been quoted over a 100 times. The Indian physicists' reluctance to write review articles is surprising.

Journal countries - The number of papers published by Indian authors in journals published from different countries is given in Table 4. Unlike in most other fields where US journals are used most often, in physics Indian researchers have published a larger number of papers in British journals (24.8%) than in US journals (21.86%). *Physics Abstracts* had indexed 38 Indian journals in 1992, and in these journals Indian authors had published 866 papers. These journals are listed in Table 5. The Indian Academy of Sciences, Bangalore, and the Publication and Information Directorate of CSIR, New Delhi, publish the leading Indian journals.

Subfields - India, in terms of number of papers published, appears to be strong in materials science (subfield 81) and condensed matter physics (subfields 61-79). *Physics Abstracts* classifies papers into 10 major fields (A0-A9), and 61 subfields (A01-A98). Papers are usually classified under two or three most suitable subfields and these are given, along with the unique INSPEC number assigned to the paper, in the first line. These classification numbers are either four digit numbers (e.g. A7750 for dielectric breakdown, A indicating *Physics Abstracts*) or four digit numbers with an alphabet (e.g. B2810D for dielectric breakdown and discharge, B indicating *Electrical & Electronics Abstracts*). On an average, each paper is classified under 2.03 subfields. In Table 6, each paper is assigned to only one subfield, the first of the subfields listed in *Physics Abstracts*. In Table 7, papers are counted under each one of the subfields. *Physics Abstracts* also provides a more elaborate classification, and this appears just below the abstract in each entry. Here, each paper may be classified under up to 10 or even more four-digit subfields. In this report, we have not gone to this depth of classification.

Share in major fields - To see India's share of the world literature in the ten major fields of physics in perspective, we have provided data for 15 other countries (Table 8). Together with India, these 15 countries constitute the world's largest performers of physics research as reflected by *Physics Abstracts*. Please note the total given in the right-most column will be less than the sum of the columns A0-A9, as many entries would have been counted under more than one category. India occupies the tenth position, as against China's sixth! World-wide condensed matter physics (A6 and A7) and cross-disciplinary physics (A8) have larger number of papers than other areas. The trend is the same in India and China. However, the Chinese are also very active in classical areas of phenomenology (A4), and to some extent in A0: General. The United States with over 46,000 papers accounts for about 28% of the world literature output, followed by Japan (9.69%) and Germany (7.18%). India accounts for 2.76% and China 3.52%.

Leading institutions - Indian Institute of Science, Bangalore, and Bhabha Atomic Research Centre, Bombay, are the only two institutions that have published more than 200 papers (as seen from *Physics Abstracts* 1992). Eight other institutions (viz. Tata Institute of Fundamental Research, Banaras Hindu University, Jadavpur University, National Physical Laboratory and the Indian Institutes of Technology at Delhi, Madras, Kharagpur and Kanpur) have published more than 100 papers each in physics. In all, 441 institutions have published at least one paper in physics (Table 9). These have been classified into different types in Table 10. Academic institutions -- universities and colleges -- have published over 62.8% of all the papers, and research institutions under Department of Atomic Energy, Council of Scientific and Industrial Research, Defence Research and Development Organisation and Indian Council of Agricultural Research have published a little over 25% of the papers. The laboratories under Department of Science and Technology have accounted for about 8.5%.

Geographic distribution -- The institutions publishing papers in physics are located in more than 160 towns/cities spread over 25 states of India (Tables 11 and 12). Physics research is highly concentrated in Bombay, Calcutta, Delhi, and Bangalore, these four cities accounting for over 40% of India's total output of papers. These are followed by Madras and Hyderabad. Three institutions, viz. Bhabha Atomic Research Centre, Tata Institute of Fundamental Research and Indian Institute of Technology, Bomaby, account for more than 91% of Bombay's physics research output, and three institutions, viz. Indian Institute of Technology, Delhi, National Physical Laboratory and Delhi University account for more than 83% of Delhi's physics research output, whereas in Calcutta physics

research is more evenly spread. West Bengal and Maharastra are the two states that carry out considerable amount of physics research, followed by Uttar Pradesh, Karnataka and Delhi. Again, physics research is more evenly spread in West Bengal than in Maharashtra.

Journal use by leading institutions -- The sets of journals often used by 22 prolific institutions are given in Table 13. This table was constructed by taking the top 22 institutions (publishing the largest number of papers) and the journals in which Indian researchers had published at least 30 papers. Three journals, viz. *Indian Journal of Marine Science, Indian Journal of Pure and Applied Physics* and *Proceedings of the Indian National Academy of Sciences - Section A* were removed from this table as these journals were not used often by the top 22 institutions. Indian Institute of Science has used *Physical Review B, Journal of Materials Science, Solid State Communication* and *Journal of Applied Physics* often. Bhabha Atomic Research Centre has used *Physica B, Pramana, Bulletin of Materials Science* and *Physical Review A* often, whereas scientists of the Tata Institute of Fundamental Research have published at least 8 papers each in *Physical Review B, Pramana, Physica C* and *Modern Physics Letters A*. *Journal of Materials Science* is often used by scientists of Indian Institute of Technology, Madras, Indian Association for the Cultivation of Science, Indian Institute of Science, and Banaras Hindu University. *Bulletin of Materials Science* is used often by Bhabha Atomic Research Centre and National Physical Laboratory, whereas *Chemical Physics Letters* is used often by Indian Association for the Cultivation of Science.

Subfield strengths of leading institutions -- Table 14 gives information on the subfields of physics in which the 22 prolific publishing institutions are active. For example Indian Institute of Technology, Madras, Banaras Hindu University, Indira Gandhi Centre for Atomic Research, Indian Institute of Technology, Kanpur, and Bhabha Atomic Research Centre are active in materials science. National Physical Laboratory, Tata Institute of Fundamental Research, Indian Institute of Science, Bhabha Atomic Research Centre and Hyderabad Unviersity are active in superconductivity. Indian Institute of Technology, Delhi, Bhabha Atomic Research Centre, Indian Institute of Technology, Madras and Hyderabad University are the leading Indian institutions in optics research. In Indian Institute of Technology, Delhi, much of the activity falls in the areas of optics and energy research and environmental science, whereas research at Indian Institute of Science is more evenly spread with at least ten papers in ten subfields.

Use of high impact journals -- Tables 15 provides information on papers published by different institutions in journals of different impact factors. 376 papers or a little over 8.1% of the total number of journal papers from India were published in 22 journals having an impact factor of 2.5 or higher. These include 144 papers in journals in the impact factor range > 2.5 < 3.0, 177 papers in journals in the impact factor range > 3.0 < 3.5, 28 papers in the range >3.5 <4.0, five papers in the range >5.0 <6.0 and 22 papers in journals with impact factor greater than 6.0. There was one paper in *Nature* (impact factor >22.10) in the area of Stellar systems: Galactic and Extra galactic Objects and Systems: Universe from Poona University. Indian Institute of Science had published 33 papers in journals with impact factor higher than 3.0. The corresponding figure for Tata Institute of Fundamental Research is 27 and that for Bhabha Atomic Research Centre is nine. Among the Indian Institutes of Technology, Bombay and Kanpur had nine papers each, Kharagpur had five, Delhi had two and Madras one in journals with impact factor higher than 3.0. Table 16 provides data on the distribution of high and low impact journal papers from Indian laboratories among the 61 subfields.

Conclusion

A detailed analysis of publications originating in India and indexed in *Physics Abstracts* 1992 reveal that Indian researchers publish reasonably actively in physics and they publish in almost all subfields. We have identified subfields in which India is actively publishing, institutions responsible for the publications, the journals used, and the extent of use of letters journals. We have also identified institutions publishing in high impact journals in different subfields. Unlike in biology, medicine and agriculture, less than one physics paper in five is published in an Indian journal. Much of physics research takes place in higher educational institutions, but how well are these funded and what have we done to ensure a climate conducive for innovation and discovery in these institutions? As a matter of strategy, Indian physicists should try to publish more often in high impact journals and also write review articles, which are, in general, cited more often than original research papers.

Studies such as these constitute the first step in mapping scientific research in India, and can be used, in conjunction with peer evaluations, in performance evaluation and assessment.

Tables

Table 1: Indian research papers classified by publication type *INSPEC* (Physics Abstracts) 1992

Sl #	Publication type	# of papers
1	Journal Paper	4260
2	Conference Paper in Journal	346
3	Conference Paper	105
4	Book Chapter	8
	Total	4719

Table 2: Journals used by Indian researchers as seen from *INSPEC* (Physics Abstracts) 1992 (arranged by number of papers)

Sl #	Journal title	IF 92	Publication country	# of papers
1	Journal of Materials Science Letters	0.511	UK	116
2	Pramana	0.390	India	115
3	Bulletin of Materials Science	0.244	India	110
4	Physical Review B [Condensed Matter]	3.259	USA	109
5	Astrophysics and Space Science	0.325	Netherlands	103
6	Indian Journal of Pure and Applied Physics	0.132	India	99
7	Solid State Communications	1.369	USA	81
8	Journal of Materials Science	0.798	UK	73
9	Journal of Applied Physics	1.532	USA	64
10	Journal of Physics: Condensed Matter	1.627	UK	51
11	Indian Journal of Theoretical Physics	0.000	India	51
12	Physica C	2.044	Netherlands	51
13	Physica Status Solidi B	0.568	Germany	51
14	Indian Journal of Radio & Space Physics	0.049	India	50
15	Modern Physics Letters A	1.470	Singapore	50
16	Physical Review A [Atomic, Molecular, and Optical Physics]	2.157	USA	47
17	Indian Journal of Physics, Part B	0.000	India	44
18	Physica B	0.939	Netherlands	42
19	Crystal Research and Technology	0.342	Germany	41
20	Chemical Physics Letters	2.686	Netherlands	40
21	Journal of Physics D [Applied Physics]	0.975	UK	38
22	Journal of Sound and Vibration	0.751	UK	38
23	Current Science	0.253	India	38
24	Physica Status Solidi A	0.492	Germany	38
25	Indian Journal of Physics, Part A	0.000	India	37
26	Physical Review C [Nuclear Physics]	1.873	USA	37
27	Materials Letters	0.695	Netherlands	36
28	Physical Review A [Statistical Physics, Plasmas, Fluids, and Related Interdisciplinary Topics]	2.157	USA	36
29	Physics Letters A	1.135	Netherlands	36
30	Indian Journal of Marine Sciences	0.078	India	35
31	Acta Ciencia Indica, Physics	0.000	India	35
32	Thin Solid Films	1.029	Switzerland	34
33	Indian Journal of Pure and Applied Mathematics	0.060	India	32
34	Proceedings of the Indian National Science Academy, Part A	0.000	India	32
35	Journal of Physics A [Mathematical and General]	2.189	UK	31

Table 2 contd.

36	Scripta Metallurgica et Materialia	1.331	USA	31
37	Physics Letters B	3.438	Netherlands	30
38	Journal of Magnetism and Magnetic Materials	1.297	Netherlands	30
39	Modelling, Simulation & Control B	0.000	France	29
40	Physical Review D [Particles and Fields]	2.587	USA	27
41	Applied Physics Letters	3.537	USA	26
42	Journal of Physics B [Atomic, Molecular and Optical Physics]	2.268	UK	26
43	Materials Science & Engineering A [Structural Materials: Properties, Microstructure and Processing]	0.000	Switzerland	26
44	International Journal of Modern Physics A	1.369	Singapore	26
45	Physica A	1.354	Netherlands	26
46	Acustica	0.327	Germany	25
47	International Journal of Engineering Science	0.555	UK	25
48	Journal of the Physics and Chemistry of Solids	1.255	UK	24
49	Astronomy and Astrophysics	1.821	Germany	24
50	Journal of Chemical Physics	3.433	USA	24
51	Materials Science & Engineering B [Solid-State Materials for Advanced Technology]	0.000	Switzerland	23
52	Metallurgical Transactions A [Physical Metallurgy and Materials Science]	1.363	USA	23
53	Molecular Crystals and Liquid Crystals	0.883	UK	23
54	Optics Communications	1.299	Netherlands	23
55	Journal of Atmospheric and Terrestrial Physics	0.799	UK	23
56	Energy Conversion and Management	0.011	UK	23
57	Journal of Physics G [Nuclear and Particle Physics]	1.257	UK	22
58	Physical Review D [Particles, Fields, Gravitation, and Cosmology]	2.587	USA	22
59	Indian Journal of Technology	0.142	India	21
60	Journal of Non-Crystalline Solids	1.177	Netherlands	20
61	Computers and Structures	0.298	UK	20
62	Proceedings of the Indian Academy of Sciences, Earth and Planetary Sciences	0.000	India	20
63	Astrophysical Journal	2.931	USA	19
64	Physical Review Letters	7.375	USA	19
65	Japanese Journal of Applied Physics, Part 1 [Regular Papers & Short Notes]	1.363	Japan	19
66	Materials Research Bulletin	1.009	USA	18
67	Engineering Fracture Mechanics	0.380	UK	18
68	Journal of Mathematical Physics	0.880	USA	18
69	IETE Technical Review	0.000	India	17
70	Monthly Notices of the Royal Astronomical Society	0.000	UK	17

Table 2 contd.

71	Nuovo Cimento A	0.495	Italy	17
72	Physica Scripta	0.878	Sweden	17
73	International Journal of Theoretical Physics	0.377	USA	17
74	Journal of Astrophysics and Astronomy	0.464	India	17
75	Spectrochimica Acta, Part A [Molecular Spectroscopy]	0.806	UK	17
76	Applied Optics	1.064	USA	17
77	Journal of Modern Optics	0.807	UK	16
78	Journal of Optics	0.387	France	16
79	Canadian Journal of Physics	0.461	Canada	16
80	THEOCHEM	0.000	Netherlands	16
81	Transactions of the Indian Institute of Metals	0.000	India	16
82	Zeitschrift fur Physik C [Particles and Fields]	2.647	Germany	15
83	Modern Physics Letters B	0.000	Singapore	15
84	International Journal of Energy Research	0.059	UK	15
85	Wear	0.472	Switzerland	14
86	Journal of Nuclear Materials	1.561	Netherlands	14
87	Heat Recovery Systems & CHP	0.037	UK	14
88	Journal of the Physical Society of Japan	1.881	Japan	14
89	Acta Metallurgica et Materialia	1.971	USA	14
90	International Journal of Hydrogen Energy	0.797	UK	14
91	International Journal of Quantum Chemistry	1.332	USA	14
92	Renewable Energy	0.000	UK	14
93	Journal of Molecular Liquids	0.543	Netherlands	13
94	Journal of Reinforced Plastics and Composites	0.357	USA	13
95	Indian Journal of Power and River Valley Development	0.000	India	13
96	Nuclear Tracks and Radiation Measurements	0.285	UK	13
97	International Journal of Fracture	0.642	Netherlands	13
98	Proceedings of the National Academy of Sciences of India, Section A [Physical Sciences]	0.000	India	13
99	Proceedings of the SPIE - The International Society for Optical Engineering	0.000	USA	13
100	Semiconductor Science and Technology	1.406	UK	13
101	Ferroelectrics	0.773	UK	13
102	Journal of Physical Chemistry	3.452	USA	12
103	Journal of Plasma Physics	0.489	UK	12
104	Journal of Power Sources	0.569	Switzerland	12
105	Journal of Raman Spectroscopy	1.043	UK	12

Table 2 contd.

106	Acoustics Letters	0.000	UK	12
107	Infrared Physics	0.632	UK	12
108	Nuclear Physics A	1.936	Netherlands	12
109	Journal of Alloys and Compounds	0.667	Switzerland	12
110	Acta Physica Hungarica	0.000	Hungary	12
111	Acta Physica Polonica A	0.222	Poland	12
112	Journal of Crystal Growth	1.592	Netherlands	12
113	Zeitschrift fur Metallkunde	0.687	Germany	11
114	Journal of Solid State Chemistry	1.575	USA	11
115	Journal of the Chemical Society Faraday Transactions	1.700	UK	11
116	Acta Mechanica	0.411	Austria	11
117	Nuclear Instruments & Methods in Physics Research, Section B [Beam Interactions with Materials and A	1.152	Netherlands	11
118	Phase Transitions	0.564	UK	11
119	Physics of the Earth and Planetary Interiors	1.186	Netherlands	11
120	Solar Physics	1.301	Netherlands	11
121	Superconductor Science & Technology	1.248	UK	11
122	Applied Radiation and Isotopes	0.619	UK	10
123	Chemical Physics	1.963	Netherlands	10
124	Journal of the American Ceramic Society	1.688	USA	10
125	Composite Structures	0.622	UK	10
126	Mausam	0.000	India	10
127	Nuovo Cimento D	0.404	Italy	10
128	Optics and Laser Technology	0.340	UK	10
129	Czechoslovak Journal of Physics	0.309	Czechoslovakia	10
130	Journal of Geophysical Research	2.100	USA	10
131	Contributions to Plasma Physics	0.416	Germany	9
132	International Journal of Modern Physics B	0.000	Singapore	9
133	Philosophical Magazine B [Physics of Condensed Matter, Electronic, Optical and Magnetic Properties]	1.350	UK	9
134	International Journal of Remote Sensing	0.814	UK	9
135	Radiation Effects and Defects in Solids	0.239	UK	9
136	Solar Energy Materials and Solar Cells	0.000	Netherlands	9
137	Journal of Geomagnetism and Geoelectricity	0.333	Japan	9
138	Journal of Magnetic Resonance	0.000	USA	9
139	Surface and Coatings Technology	0.933	Switzerland	9
140	Tectonophysics	0.000	Netherlands	9
141	Geophysical Research Letters	1.937	USA	8
142	Materials Transactions, JIM	0.876	Japan	8
143	Measurement Science & Technology	0.581	UK	8
144	International Journal of Heat and Mass Transfer	0.565	UK	8
145	Cryogenics	0.790	UK	8

Table 2 contd.

146	International Journal of Pressure Vessels and Piping	0.154	UK	8
147	Physics of Fluids B [Plasma Physics]	1.944	USA	8
148	Planetary and Space Science	1.075	UK	8
149	Earth, Moon, and Planets	0.806	Netherlands	8
150	Proceedings of the Indian Academy of Sciences, Chemical Sciences	0.000	India	8
151	Review of Scientific Instruments	1.288	USA	8
152	AIP Conference Proceedings	0.000	USA	8
153	Europhysics Letters	2.463	Switzerland	8
154	Zeitschrift fur Angewandte Mathematik und Mechanik	0.174	Germany	7
155	General Relativity and Gravitation	0.758	USA	7
156	Journal of the Institution of Electronics and Telecommunication Engineers	0.000	India	7
157	Journal of the Institution of Engineers [India] Electronics and Telecommunication Engineering Divisi	0.000	India	7
158	Liquid Crystals	1.432	UK	7
159	Modelling, Measurement & Control B	0.000	France	7
160	Nuclear Instruments & Methods in Physics Research, Section A [Accelerators, Spectrometers, Detectors	0.962	Netherlands	7
161	Nuovo Cimento C	0.150	Italy	7
162	Optical Engineering	0.765	USA	7
163	International Journal of Non-Linear Mechanics	0.515	UK	7
164	Boundary-Layer Meteorology	1.090	Netherlands	7
165	Radiation Protection Dosimetry	0.231	UK	7
166	Sadhana	0.000	India	7
167	Solid-State Electronics	0.846	UK	7
168	Journal of Luminescence	1.197	Netherlands	7
169	Journal of Materials Research	2.623	USA	7
170	Zeitschrift fur Naturforschung, Teil A [Physik, Physikalische Chemie, Kosmophysik]	0.783	Germany	7
171	Vacuum	0.700	UK	7
172	Zeitschrift fur Physik A [Hadrons and Nuclei]	1.428	Germany	6
173	Fizika	0.000	Yugoslavia	6
174	Fluid Dynamics Research	0.338	Netherlands	6
175	Ceramics International	0.500	Italy	6
176	Hyperfine Interactions	0.499	Switzerland	6
177	Materials Science and Technology	0.819	UK	6
178	Metallurgical Transactions B [Process Metallurgy]	0.928	USA	6
179	International Journal of Climatology	1.155	UK	6
180	Nuclear Physics B, Proceedings Supplements	0.000	Netherlands	6

Table 2 contd.

181	Defence Science Journal	0.000	India	6
182	Energy	0.189	UK	6
183	Pure and Applied Geophysics	0.550	Switzerland	6
184	Solar Energy	0.369	USA	6
185	Solar Energy Materials	0.000	Netherlands	6
186	Journal of Materials Science: Materials in Electronics	0.453	UK	6
187	Journal of Mathematical and Physical Sciences	0.000	India	6
188	Fusion Technology	1.800	USA	5
189	Journal of Quantitative Spectroscopy and Radiative Transfer	0.775	UK	5
190	Journal of Vacuum Science & Technology A [Vacuum, Surfaces, and Films]	2.154	USA	5
191	Journal of the Optical Society of America B [Optical Physics]	2.276	USA	5
192	Journal of Molecular Spectroscopy	1.477	USA	5
193	Vibrational Spectroscopy	0.000	Netherlands	5
194	Solid State Ionics, Diffusion & Reactions	1.093	Netherlands	5
195	Computers & Mathematics with Applications	0.288	UK	5
196	International Journal for Numerical Methods in Fluids	0.597	UK	5
197	Nuclear Engineering and Design	0.166	Netherlands	5
198	Nuclear Physics B	5.450	Netherlands	5
199	Nuclear Technology	0.373	USA	5
200	International Journal of Fatigue	0.220	UK	5
201	Acta Ciencia Indica, Mathematics	0.000	India	5
202	Philosophical Magazine Letters	1.786	UK	5
203	Australian Journal of Physics	0.655	Australia	5
204	Physics and Chemistry of Glasses	1.105	UK	5
205	Plasma Physics and Controlled Fusion	2.871	UK	5
206	Praktische Metallographie	0.000	Germany	5
207	Journal of Applied Electrochemistry	0.927	UK	5
208	Applied Physics A [Solids and Surfaces]	1.481	Germany	5
209	Acta Crystallographica, Section A [Foundations of Crystallography]	2.409	Denmark	5
210	Waerme- und Stoffuebertragung	0.155	Germany	5
211	Journal of Molecular Structure	0.943	Netherlands	4
212	Steel Research	0.443	Germany	4
213	Health Physics	0.629	USA	4
214	Journal of the Acoustical Society of America	1.186	USA	4
215	Journal of the American Chemical Society	0.000	USA	4
216	Journal of the Optical Society of America A [Optics and Image Science]	1.467	USA	4
217	American Journal of Physics	0.563	USA	4
218	Materials Chemistry and Physics	0.395	Switzerland	4

Table 2 contd.

219	Composites Science and Technology	1.108	UK	4
220	Materials Forum	0.000	Australia	4
221	IEEE Transactions on Plasma Science	1.317	USA	4
222	Fatigue & Fracture of Engineering Materials & Structures	0.625	UK	4
223	Mechanics Research Communications	0.000	UK	4
224	International Journal of Electronics	0.305	UK	4
225	Corrosion Science	0.777	UK	4
226	Atmospheric Research	0.000	Netherlands	4
227	Annals of Nuclear Energy	0.326	UK	4
228	Journal of Mathematical Analysis and Applications	0.291	USA	4
229	Japanese Journal of Applied Physics, Part 2 [Letters]	0.000	Japan	4
230	Polymer Testing	0.317	UK	4
231	Powder Metallurgy International	0.250	Germany	4
232	Progress of Theoretical Physics	1.446	Japan	4
233	British Corrosion Journal	0.000	UK	4
234	AIAA Journal	0.553	USA	4
235	Journal of Electron Spectroscopy and Related Phenomena	1.796	Netherlands	4
236	Transactions of the ASME. Journal of Applied Mechanics	0.000	USA	4
237	Transactions of the ASME. Journal of Fluids Engineering	0.000	USA	4
238	Canadian Journal of Chemical Engineering	0.566	Canada	3
239	Nuovo Cimento B	0.408	Italy	3
240	Journal of Nuclear Science and Technology	0.425	Japan	3
241	Acta Geodaetica, Geophysica et Montanistica Hungarica	0.000	Hungary	3
242	AIChE Journal	0.000	USA	3
243	Geophysical Journal International	1.469	UK	3
244	Geophysics	0.000	USA	3
245	Applied Scientific Research	0.452	Netherlands	3
246	Journal of Superconductivity	1.489	USA	3
247	Journal of Testing and Evaluation	0.283	USA	3
248	Advanced Composite Materials	0.000	Netherlands	3
249	Helvetica Physica Acta	0.000	Switzerland	3
250	Journal of Vacuum Science & Technology B [Microelectronics Processing and Phenomena]	2.270	USA	3
251	Classical and Quantum Gravity	1.442	UK	3
252	IEEE Photonics Technology Letters	0.000	USA	3
253	Communications in Mathematical Physics	0.000	Germany	3
254	Composites	0.781	UK	3
255	Journal of Materials Engineering and Performance	0.254	USA	3

Table 2 contd.

256	Mathematical and Computer Modelling	0.237	UK	3
257	Ferroelectrics Letters Section	0.678	UK	3
258	Medical & Biological Engineering & Computing	0.750	UK	3
259	Canadian Journal of Applied Spectroscopy	0.000	Canada	3
260	Computers & Geosciences	0.354	UK	3
261	Annales Geophysicae. Atmospheres, Hydrospheres and Space Sciences	0.000	France	3
262	Zeitschrift fur Physik B [Condensed Matter]	2.243	Germany	3
263	International Communications in Heat and Mass Transfer	0.167	UK	3
264	Numerical Heat Transfer, Part A [Applications]	0.406	UK	3
265	Optica Applicata	0.145	Poland	3
266	Optical and Quantum Electronics	1.267	UK	3
267	International Journal of Mass Spectrometry and Ion Processes	2.878	Netherlands	3
268	Optics Letters	0.000	USA	3
269	International Journal of Mechanical Sciences	0.340	UK	3
270	Optik	0.619	Germany	3
271	Waste Management	0.000	UK	3
272	CALPHAD: Computer Coupling of Phase Diagrams and Thermochemistry	0.881	UK	3
273	Plating and Surface Finishing	0.000	USA	3
274	Numerical Heat Transfer, Part B [Fundamentals]	0.000	UK	3
275	Journal of Applied Crystallography	1.513	Denmark	3
276	Zeitschrift fur Physik D [Atoms, Molecules and Clusters]	1.416	Germany	3
277	British Journal of Non-Destructive Testing	0.087	UK	3
278	Applied Acoustics	0.000	UK	3
279	Corrosion	0.593	USA	3
280	Journal of Low Temperature Physics	1.297	USA	3
281	Synthetic Metals	1.068	Switzerland	3
282	Journal of Materials Processing Technology	0.000	Netherlands	3
283	Theoretica Chimica Acta	2.146	Germany	3
284	Surface Science	2.668	Netherlands	2
285	Zeitschrift fur Angewandte Mathematik und Physik	0.311	Switzerland	2
286	Bulletin of the Indian Vacuum Society	0.000	India	2
287	Philosophical Magazine A [Physics of Condensed Matter, Defects and Mechanical Properties]	0.000	UK	2
288	Fortschritte der Physik	1.180	Germany	2
289	Celestial Mechanics and Dynamical Astronomy	0.000	Netherlands	2

Table 2 contd.

290	Journal of Polymer Science, Part B [Polymer Physics]	1.526	USA	2
291	Chaos, Solitons and Fractals	0.000	UK	2
292	Chemical Engineering Journal	0.000	Switzerland	2
293	Earth and Planetary Science Letters	2.667	Netherlands	2
294	Environmental.Monitoring and Assessment	0.325	Netherlands	2
295	Journal of Technical Physics	0.000	Poland	2
296	Astronomical Journal	2.407	USA	2
297	Journal of Thermal Stresses	0.000	USA	2
298	Acta Geophysica Polonica	0.000	Poland	2
299	Proceedings of the Royal Society of London, Series A [Mathematical and Physical Sciences]	0.000	UK	2
300	Applied Surface Science	1.146	Netherlands	2
301	Journal of the Electrochemical Society	1.625	USA	2
302	Comments on Atomic and Molecular Physics	0.000	UK	2
303	Quarterly of Applied Mathematics	0.372	USA	2
304	Jurnal Fizik Malaysia	0.000	Malaysia	2
305	IEEE Transactions on Broadcasting	0.000	USA	2
306	Key Engineering Materials	0.000	Switzerland	2
307	Archives of Mechanics	0.000	Poland	2
308	Marine Geodesy	0.000	USA	2
309	Materials Characterization	0.000	USA	2
310	Materials Evaluation	0.090	USA	2
311	IEEE Transactions on Medical Imaging	0.000	USA	2
312	Computer Physics Communications	1.503	Netherlands	2
313	Materials at High Temperatures	0.286	UK	2
314	Materials and Manufacturing Processes	0.000	USA	2
315	Measurement	0.581	UK	2
316	Computers & Chemistry	0.000	UK	2
317	Acta Physica Slovaca	0.000	Czechoslovakia	2
318	Computers & Fluids	0.382	UK	2
319	Astronomy & Astrophysics Supplement Series	0.000	France	2
320	International Journal of Solids and Structures	0.960	UK	2
321	Theoretical and Applied Climatology	0.470	Austria	2
322	Journal of Environmental Radioactivity	0.436	UK	2
323	Telecommunications	0.000	India	2
324	Molecular Crystals and Liquid Crystals Letters Section	0.000	UK	2
325	International Journal for Numerical Methods in Engineering	1.006	UK	2
326	Monthly Weather Review	0.000	USA	2
327	International Journal of Bio-Medical Computing	0.740	Netherlands	2
328	Computers in Biology and Medicine	0.000	UK	2
329	Continental Shelf Research	0.101	UK	2
330	Nuclear Engineering International	0.126	UK	2

Table 2 contd.

331	ITC Journal	0.000	Netherlands	2
332	Journal de Physique II [Atomic, Molecular and Cluster Physics, Chemical Physics, Mechanics and Hydro	0.000	France	2
333	International Journal of Engineering Fluid Mechanics	0.000	USA	2
334	Astrophysical Letters and Communications	0.000	UK	2
335	Journal of Membrane Science	0.000	Netherlands	2
336	Spectroscopy Letters	0.505	USA	2
337	International Journal of Optoelectronics	0.000	UK	2
338	Acta Physica Polonica B	0.000	Poland	2
339	Desalination	0.000	Netherlands	2
340	International Journal of Refractory & Hard Metals	0.000	UK	2
341	Meteorology and Atmospheric Physics	0.673	Austria	2
342	Physics Reports	6.200	Netherlands	2
343	IEEE Transactions on Magnetics	0.837	USA	2
344	Oxidation of Metals	0.760	USA	2
345	IEEE Transactions on Instrumentation and Measurement	0.481	USA	2
346	Applied Physics B [Photophysics and Laser Chemistry]	1.514	Germany	2
347	Proceedings of the Indian Academy of Sciences, Mathematical Sciences	0.000	India	2
348	Progress in Nuclear Magnetic Resonance Spectroscopy	0.000	UK	2
349	Annals of Physics	2.608	USA	2
350	Publications of the Astronomical Society of the Pacific	1.047	USA	2
351	Journal of Biological Physics	0.000	USA	2
352	Radiation Research	1.792	USA	2
353	Rapid Communications in Mass Spectrometry	0.000	UK	2
354	Journal of Climate	1.894	USA	2
355	Experimental Techniques	0.000	USA	2
356	Journal of Composite Materials	0.875	USA	2
357	Journal of Computational Chemistry	3.592	USA	2
358	Sensors and Actuators B [Chemical]	1.852	Switzerland	2
359	Journal of Electronic Materials	1.264	USA	2
360	Laser and Particle Beams	0.000	UK	2
361	International Journal of Infrared and Millimeter Waves	0.636	USA	2
362	Journal of Lightwave Technology	1.746	USA	2
363	Polymer Engineering and Science	0.944	USA	2
364	Superlattices and Microstructures	0.912	UK	2
365	Surface Engineering	0.000	UK	2

Table 2 contd.

366	Students' Journal of the Institution of Electronics & Telecommunication Engineers	0.000	India	2
367	Zeitschrift fur Kristallographie	0.000	Germany	2
368	Finite Elements in Analysis and Design	0.000	Netherlands	2
369	Transactions of the ASME. Journal of Engineering Materials and Technology	0.000	USA	2
370	Journal of Materials Chemistry	1.563	UK	2
371	Journal of Bioelectricity	0.000	USA	1
372	European Journal of Mechanics, B/Fluids	0.000	France	1
373	Journal of Scientific and Industrial Research	0.000	India	1
374	National Academy Science Letters	0.030	India	1
375	Rheologica Acta	0.000	Germany	1
376	High Temperature Science	0.000	USA	1
377	COMPEL - The International Journal for Computation and Mathematics in Electrical and Electronic Engi	0.000	UK	1
378	Bulletin of the American Meteorological Society	0.000	USA	1
379	Radiation and Environmental Biophysics	0.811	Germany	1
380	Journal of the Australian Mathematical Society, Series B [Applied Mathematics]	0.349	Australia	1
381	Nuclear Safety	0.204	USA	1
382	SIAM Journal on Mathematical Analysis	0.000	USA	1
383	Journal of Statistical Physics	1.424	USA	1
384	Noise Control Engineering Journal	0.122	USA	1
385	Optical Materials	0.000	Netherlands	1
386	Powder Diffraction	0.000	USA	1
387	Acta Oncologica	0.000	Sweden	1
388	Journal of Rheology	0.000	USA	1
389	Natural Resources Forum	0.000	UK	1
390	Journal of Applied Meteorology	0.826	USA	1
391	Computers & Chemical Engineering	1.146	UK	1
392	Electrical India	0.000	India	1
393	Meteorological Magazine	0.203	UK	1
394	Physica Scripta Volume T	0.000	Sweden	1
395	Polymer Composites	0.000	USA	1
396	Journal of Computational and Applied Mathematics	0.000	Netherlands	1
397	Revue Roumaine de Physique	0.000	Romania	1
398	Journal of Non-Newtonian Fluid Mechanics	0.000	Netherlands	1
499	Microelectronics and Reliability	0.000	UK	1
400	Radio Science	0.609	USA	1
401	International Journal of Bifurcation and Chaos in Applied Sciences and Engineering	0.000	Singapore	1

Table 2 contd.

402	Proceedings of the Institution of Mechanical Engineers, Part H [Journal of Engineering in Medicine]	0.000	UK	1
403	Journal of Biomechanics	1.020	UK	1
404	Journal of Physics of the Earth	0.000	Japan	1
405	Biomaterials	0.000	UK	1
406	IEEE Transactions on Electron Devices	0.000	USA	1
407	Reviews of Solid State Science	0.000	Singapore	1
408	Geoexploration	0.000	Netherlands	1
409	Journal of the Institution of Engineers [India] Electrical Engineering Division	0.000	India	1
410	Energy Policy	0.758	UK	1
411	Revue Roumaine des Sciences Techniques, Serie de Mecanique Appliquee	0.000	Romania	1
412	Soil Dynamics and Earthquake Engineering	0.000	UK	1
413	Annalen der Physik	0.000	Germany	1
414	Smart Materials and Structures	0.000	UK	1
415	Optics and Lasers in Engineering	0.000	UK	1
416	Journal of Chemical Information and Computer Sciences	0.000	USA	1
417	IEE Proceedings A [Science, Measurement and Technology]	0.420	UK	1
418	BHEL Journal	0.000	India	1
419	Physica Medica	0.000	Switzerland	1
420	International Journal of Rapid Solidification	0.621	UK	1
421	Philosophy of Science	0.000	USA	1
422	Muon Catalyzed Fusion	0.000	Switzerland	1
423	Chinese Journal of Physics	0.000	Taiwan	1
424	Computers & Graphics	0.000	UK	1
425	Soviet Journal of Nuclear Physics	0.000	USA	1
426	IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control	0.000	USA	1
427	Rivista del Nuovo Cimento	0.000	Italy	1
428	Astrophysical Journal, Letters	0.000	USA	1
429	Deep-Sea Research, Part A [Oceanographic Research Papers]	0.000	UK	1
430	Energy and Buildings	0.000	Switzerland	1
431	Journal of Thermal Biology	0.643	UK	1
432	Journal of the Institution of Engineers [India], Interdisciplinary Panels	0.000	India	1
433	Atomic Data and Nuclear Data Tables	0.000	USA	1
434	Physics in Medicine and Biology	1.117	UK	1
435	Modelling, Measurement & Control A	0.000	France	1
436	European Biophysics Journal	0.000	Germany	1
437	Electron Technology	0.000	Poland	1
438	Signal Processing	0.324	Netherlands	1
439	Nanostructured Materials	0.000	USA	1
440	Microprocessors and Microsystems	0.000	UK	1

Table 2 contd.

441	Singapore Journal of Physics	0.000	Singapore	1
442	Journal of Nondestructive Evaluation	0.000	USA	1
443	Journal of Microcomputer Applications	0.000	UK	1
444	Soviet Journal of Nondestructive Testing	0.000	USA	1
445	International Journal of Plasticity	0.000	UK	1
446	Processing of Advanced Materials	0.000	UK	1
447	Engineering Computations	0.000	UK	1
448	Diffusion and Defect Data - Solid State Data, Part B [Solid State Phenomena]	0.000	Liechtenstein	1
449	Contributions to Atmospheric Physics	0.000	Germany	1
450	European Journal of Mechanics, A/Solids	0.000	France	1
451	Archive of Applied Mechanics	0.094	Germany	1
452	Apeiron	0.000	Canada	1
453	Journal of the Chinese Institute of Engineers	0.000	Taiwan	1
454	Transactions of the ASME. Journal of Pressure Vessel Technology	0.000	USA	1
455	Geophysical Prospecting	0.364	Netherlands	1
456	Tecnica Italiana	0.000	Italy	1
457	Geophysical and Astrophysical Fluid Dynamics	0.000	UK	1
458	Physics and Chemistry of Liquids	0.376	UK	1
459	International Journal of Radiation Biology	2.006	UK	1
460	Berichte der Bunsengesellschaft fur Physikalische Chemie	0.000	Germany	1
461	Journal of Physical Organic Chemistry	0.000	UK	1
462	Annales de la Fondation Louis de Broglie	0.000	France	1
463	Radiobiologiya	0.000	USSR	1
464	Journal of Bioluminescence and Chemiluminescence	1.000	UK	1
465	Modelling, Simulation & Control A	0.000	France	1
466	Asia-Pacific Engineering Journal, Part A [Electrical Engineering]	0.000	Singapore	1
467	Journal of Materials Engineering	0.254	USA	1
468	Diffusion and Defect Data - Solid State Data, Part A [Defect and Diffusion Forum]	0.000	Liechtenstein	1
469	Applied Superconductivity	0.000	UK	1
470	Reviews in Mathematical Physics	0.000	Singapore	1
471	Journal de Physique I [General Physics, Statistical Physics, Condensed Matter, Cross-Disciplinary Ph	0.000	France	1
472	Transactions of the ASME. Journal of Heat Transfer	0.000	USA	1
473	Computer Methods in Applied Mechanics and Engineering	0.868	Netherlands	1
474	Progress in Particle and Nuclear Physics	0.000	UK	1
475	International Journal of Impact Engineering	0.000	UK	1

Table 2 contd.

476	Experimental Mechanics	0.308	USA	1
477	Magnetic Resonance Imaging	1.313	UK	1
478	International Journal of Modern Physics E	0.000	Singapore	1
479	Stochastics and Stochastics Reports	0.000	UK	1
480	Nuclear Fusion	3.003	Austria	1
481	Quarterly Journal of Mechanics and Applied Mathematics	0.567	UK	1
482	New Scientist	0.000	UK	1
483	Letters in Mathematical Physics	1.015	Netherlands	1
484	Microwave and Optical Technology Letters	0.260	USA	1
485	ESA Journal	0.000	Netherlands	1
486	IEE Proceedings J [Optoelectronics]	0.832	UK	1
487	International Journal of Thermophysics	0.000	USA	1
488	IEEE Transactions on Applied Superconductivity	0.000	USA	1
489	IEEE Transactions on Biomedical Engineering	0.000	USA	1
490	Thin-Walled Structures	0.000	UK	1
491	Hadronic Journal	0.000	USA	1
492	Spectrochimica Acta, Part B [Atomic Spectroscopy]	3.356	UK	1
493	Faraday Discussions	0.000	UK	1
494	Annales des Telecommunications	0.000	France	1
495	Bulletin of the Seismological Society of America	0.000	USA	1
496	Nuclear Science and Engineering	0.435	USA	1
497	Progress of Theoretical Physics Supplement	1.175	Japan	1
498	IEEE Transactions on Electrical Insulation	0.473	USA	1
499	Journal of Coastal Research	0.418	USA	1
500	Journal of Electromagnetic Waves and Applications	0.235	Netherlands	1
501	European Journal of Physics	0.000	UK	1
502	Global and Planetary Change	0.000	Netherlands	1
503	International Journal of Clinical Monitoring and Computing	0.231	Netherlands	1
504	Applied Mathematics and Computation	0.000	USA	1
505	Medical Physics	0.000	USA	1
506	Microcomputers in Civil Engineering	0.000	USA	1
507	International Journal of Radiation Oncology Biology Physics	0.000	UK	1
508	Journal of the Atmospheric Sciences	0.000	USA	1
509	Geology	0.000	USA	1
510	Few-Body Systems	0.000	Austria	1

Table 2 contd.

511	Surveys in Geophysics	0.000	Netherlands	1
512	Physics of Fluids A [Fluid Dynamics]	1.326	USA	1
513	CSIO Communications	0.000	India	1
514	Annales de l'Institut Henri Poincare Physique Theorique	0.000	France	1
515	Transactions of the ASME. Journal of Energy Resources Technology	0.000	USA	1
516	Journal of Radioanalytical and Nuclear Chemistry, Letters	0.425	Switzerland	1
517	Exploration Geophysics	0.000	Australia	1
518	Kemtechnik	0.000	Germany	1
519	IEEE Journal of Quantum Electronics	2.442	USA	1
520	Nature	22.139	UK	1
	Total number of papers in journals			4606
	Non-journal items			113
	Total			4719

Journals with impact factor = 0.000. Most of these journals are not indexed in *SCI*. Some are included in *Journal Citation Reports* and their impact factor is shown as 0.000.

Table 3: Letters and communications journals used by Indian physicists as seen from *INSPEC* (Physics Abstracts) 1992

Sl #	Journal title	Journal country	IF92	# of papers
1	Journal of Materials Science Letters	UK	0.511	116
2	Solid State Communications	USA	1.369	81
3	Modern Physics Letters A	Singapore	1.470	50
4	Chemical Physics Letters	Netherlands	2.686	40
5	Materials Letters	Netherlands	0.695	36
6	Physics Letters A	Netherlands	1.135	36
7	Physics Letters B	Netherlands	3.438	30
8	Applied Physics Letters	USA	3.537	26
9	Optics Communications	Netherlands	1.299	23
10	Physical Review Letters	USA	7.375	19
11	Modern Physics Letters B	Singapore	0.000	15
12	Acoustics Letters	UK	0.000	12
13	Europhysics Letters	Switzerland	2.463	8
14	Geophysical Research Letters	USA	1.937	8
15	Philosophical Magazine Letters	UK	1.786	5
16	Japanese Journal of Applied Physics, Part 2 [Letters]	Japan	0.000	4
17	Mechanics Research Communications	UK	0.000	4
18	Communications in Mathematical Physics	Germany	0.000	3
19	Ferroelectrics Letters Section	UK	0.678	3
20	IEEE Photonics Technology Letters	USA	0.000	3
21	International Communications in Heat and Mass Transfer	UK	0.167	3
22	Optics Letters	USA	0.000	3
23	Astrophysical Letters and Communications	UK	0.000	2
24	Computer Physics Communications	Netherlands	1.503	2
25	Earth and Planetary Science Letters	Netherlands	2.667	2
26	Molecular Crystals and Liquid Crystals Letters Section	UK	0.000	2
27	Rapid Communications in Mass Spectrometry	UK	0.000	2
28	Spectroscopy Letters	USA	0.505	2
29	Astrophysical Journal Letters	USA	0.000	1
30	CSIO Communications	India	0.000	1
31	Journal of Radioanalytical and Nuclear Chemistry, Letters	Switzerland	0.425	1
32	Letters in Mathematical Physics	Netherlands	1.015	1
33	Microwave and Optical Technology Letters	USA	0.260	1
34	National Academy Science Letters	India	0.030	1
	Total			546

Table 4: Country of publication of the journals used by Indian researchers as seen from *INSPEC* (Physics Abstracts) 1992 (arranged by number of papers)

Sl #	Publication country	# of journals	# of papers
1	UK	150	1144
2	USA	135	1007
3	India	39	866
4	Netherlands	66	706
5	Germany	32	286
6	Switzerland	21	172
7	Singapore	10	106
8	France	14	67
9	Japan	9	63
10	Italy	7	45
11	Poland	7	24
12	Canada	4	23
13	Sweden	3	19
14	Austria	5	17
15	Hungary	2	15
16	Czechoslovakia	2	12
17	Australia	4	11
18	Denmark	2	8
19	Yugoslavia	1	6
20	Liechtenstein	2	2
21	Malaysia	1	2
22	Romania	2	2
23	Taiwan	2	2
24	USSR	1	1
	Non-journal items		113
	Total	521	4719

Table 5: Indian journals covered by *INSPEC* (Physics Abstracts) 1992 (arranged by number of papers)

Sl #	Journal title	# of papers
1	Pramana, Journal of Physics	115
2	Bulletin of Materials Science	110
3	Indian Journal of Pure and Applied Physics	99
4	Indian Journal of Theoretical Physics	51
5	Indian Journal of Radio & Space Physics	50
6	Indian Journal of Physics, Part B	44
7	Current Science	38
8	Indian Journal of Physics, Part A	37
9	Indian Journal of Marine Sciences	35
10	Acta Ciencia Indica, Physics	35
11	Indian Journal of Pure and Applied Mathematics	32
12	Proceedings of the Indian National Science Academy, Part A	32
13	Indian Journal of Technology	21
14	Proceedings of the Indian Academy of Sciences, Earth and Planetary Sciences	20
15	IETE Technical Review	17
16	Journal of Astrophysics and Astronomy	17
17	Transactions of the Indian Institute of Metals	16
18	Indian Journal of Power and River Valley Development	13
19	Proceedings of the National Academy of Sciences of India, Section A [Physical Sciences]	13
20	Mausam	10
21	Proceedings of the Indian Academy of Sciences, Chemical Sciences	8
22	Journal of the Institution of Electronics and Telecommunication Engineers	7
23	Journal of the Institution of Engineers [India] Electronics and Telecommunication Engineering Divisi	7
24	Sadhana	7
25	Defence Science Journal	6
26	Journal of Mathematical and Physical Sciences	6
27	Acta Ciencia Indica, Mathematics	5
28	Bulletin of the Indian Vacuum Society	2
29	Telecommunications	2
30	Proceedings of the Indian Academy of Sciences, Mathematical Sciences	2

Table 5 contd.

Sl #	Journal title	# of papers
31	Students' Journal of the Institution of Electronics & Telecommunication Engineers	2
32	Journal of Scientific and Industrial Research	1
33	National Academy Science Letters	1
34	Electrical India	1
35	Journal of the Institution of Engineers [India] Electrical Engineering Division	1
36	BHEL Journal	1
37	Journal of the Institution of Engineers [India], Interdisciplinary Panels	1
38	CSIO Communications	1
	Total	866

Table 6: Indian research papers covered by *INSPEC* (Physics Abstracts) 1992 classified by subfields (arranged by number of papers)

Sl #	Code	Subfield	# of papers
1	81	MATERIALS SCIENCE	519
2	61	STRUCTURE OF LIQUIDS AND SOLIDS: CRYSTALLOGRAPHY	219
3	47	FLUID DYNAMICS	209
4	74	SUPERCONDUCTIVITY	200
5	78	OPTICAL PROPERTIES AND CONDENSED MATTER SPECTROSCOPY AND OTHER INTERACTIONS OF MATTER WITH PARTICLES	181
6	46	MECHANICS, ELASTICITY, RHEOLOGY	173
7	42	OPTICS	168
8	86	ENERGY RESEARCH AND ENVIRONMENTAL SCIENCE	164
9	72	ELECTRONIC TRANSPORT IN CONDENSED MATTER	151
10	92	HYDROSPHERIC AND LOWER ATMOSPHERIC PHYSICS	142
11	87	BIOPHYSICS, MEDICAL PHYSICS, AND BIOMEDICAL ENGINEERING	130
12	98	STELLAR SYSTEMS: GALACTIC AND EXTRAGALACTIC OBJECTS AND SYSTEMS: UNIVERSE	103
13	33	MOLECULAR SPECTRA AND INTERACTIONS WITH PHOTONS	102
14	94	AERONOMY, SPACE PHYSICS, AND COSMIC RAYS	101
15	75	MAGNETIC PROPERTIES AND MATERIALS	100
16	91	SOLID EARTH PHYSICS	95
17	77	DIELECTRIC PROPERTIES AND MATERIALS	90
18	52	THE PHYSICS OF PLASMAS AND ELECTRIC DISCHARGES	88
19	11	GENERAL THEORY OF FIELDS AND PARTICLES	84
20	05	STATISTICAL PHYSICS AND THERMODYNAMICS	80
21	64	EQUATIONS OF STATE, PHASE EQUILIBRIA, AND PHASE TRANSITIONS	80
22	68	SURFACES AND INTERFACES: THIN FILMS AND WHISKERS	80
23	73	ELECTRONIC STRUCTURE AND ELECTRICAL PROPERTIES OF SURFACES, INTERFACES, AND THIN FILMS	80
24	03	CLASSICAL AND QUANTUM PHYSICS: MECHANICS AND FLUIDS	79
25	62	MECHANICAL AND ACOUSTIC PROPERTIES OF CONDENSED MATTER	77
26	76	MAGNETIC RESONANCE AND RELAXATION IN CONDENSED MATTER: MOSSBAUER EFFECT	71
27	71	ELECTRON STATES	70
28	25	NUCLEAR REACTIONS AND SCATTERING: SPECIFIC REACTIONS	69
29	13	SPECIFIC REACTIONS AND PHENOMENOLOGY	68
30	31	THEORY OF ATOMS AND MOLECULES	60

Table 6 contd.

Sl #	Code	Subfield	# of papers
31	97	STARS	58.
32	12	SPECIFIC THEORIES AND INTERACTION MODELS, PARTICLE SYSTEMATICS	56
33	63	LATTICE DYNAMICS AND CRYSTAL STATISTICS	56
34	66	TRANSPORT PROPERTIES OF CONDENSED MATTER (NON ELECTRONIC)	56
35	82	PHYSICAL CHEMISTRY	55
36	95	FUNDAMENTAL ASTRONOMY AND ASTROPHYSICS: INSTRUMENTATION AND TECHNIQUES AND ASTRONOMICAL OBSERVATIONS	54
37	29	EXPERIMENTAL METHODS AND INSTRUMENTATION FOR ELEMENTARY PARTICLE AND NUCLEAR PHYSICS	51
38	34	ATOMIC AND MOLECULAR COLLISION PROCESSES AND INTERACTIONS	50
39	07	SPECIFIC INSTRUMENTATION AND TECHNIQUES OF GENERAL USE IN PHYSICS	48
40	21	NUCLEAR STRUCTURE	48
41	28	NUCLEAR ENGINEERING AND NUCLEAR POWER STUDIES	45
42	96	SOLAR SYSTEM	41
43	04	RELATIVITY AND GRAVITATION	35
44	32	ATOMIC SPECTRA AND INTERACTIONS WITH PHOTONS	31
45	79	ELECTRON AND ION EMISSION BY LIQUIDS AND SOLIDS: IMPACT PHENOMENA	28
46	93	GEOPHYSICAL OBSERVATIONS, INSTRUMENTATION, AND TECHNIQUES	27
47	43	ACOUSTICS	23
48	65	THERMAL PROPERTIES OF CONDENSED MATTER	22
49	23	RADIOACTIVITY AND ELECTROMAGNETIC TRANSITIONS	18
50	36	STUDIES OF SPECIAL ATOMS AND MOLECULES	14
51	44	HEAT FLOW, THERMAL AND THERMODYNAMIC PROCESSES	13
52	06	MEASUREMENT SCIENCE, GENERAL LABORATORY TECHNIQUES AND INSTRUMENTATION SYSTEMS	11
53	41	ELECTRICITY AND MAGNETISM: FIELDS AND CHARGED PARTICLES	10
54	01	COMMUNICATION, EDUCATION, HISTORY AND PHILOSOPHY	9
55	35	PROPERTIES OF ATOMS AND MOLECULES: INSTRUMENTS AND TECHNIQUES	9
56	51	KINETIC AND TRANSPORT THEORY OF FLUIDS: PHYSICAL PROPERTIES OF GASES	7
57	02	MATHEMATICAL, METHODS IN PHYSICS	4
58	67	QUANTUM FLUIDS AND SOLIDS, LIQUID AND SOLID HELIUM	4
59	24	NUCLEAR REACTIONS AND SCATTERING: GENERAL	3
		Total	4719

Table 7: India's contribution to the world literature of different subfields of physics as seen from *INSPEC* (Physics Abstracts)*1992*

Class #	Field, Subfield	World	India	%
A0	**GENERAL**	**28459**	**646**	**2.27**
A01	COMMUNICATION, EDUCATION, HISTORY AND PHILOSOPHY	4802	50	1.04
A02	MATHEMATICAL METHODS IN PHYSICS MECHANICS AND FIELDS	8478	235	2.77
A03	CLASSICAL AND QUANTUM PHYSICS MECHANICS AND FIELDS	4440	138	3.11
A04	RELATIVITY AND GRAVITATION	2155	93	4.32
A05	STATISTICAL PHYSICS AND THERMODYNAMICS	4992	1.39	2.78
A06	MEASUREMENT SCIENCE, GENERAL LABORATORY TECHNIQUES, AND INSRUMENTATION SYSTEMS	3100	47	1.52
A07	SPECIFIC INSTRUMENTATION AND TECHNIQUES OF GENERAL USE IN PHYSICS	7082	103	1.45
A1	**THE PHYSICS OF ELEMENTARY PARTICLES AND FIELDS**	**9695**	**265**	**2.73**
A11	GENERAL THEORY OF FIELDS AND PARTICLES	5914	170	2.87
A12	SPECIFIC THEORIES AND INTERACTION MODELS PARTICLE SYSTEMATICS	4299	114	2.65
A13	SPECIFIC REACTIONS AND PHENOMENOLOGY	3596	93	2.59
A14	PROPERTIES OF SPECIFIC PARTICLES AND RESONANCES	3514	96	2.73
A2	**NUCLEAR PHYSICS**	**16225**	**294**	**1.81**
A21	NUCLEAR STRUCTURE	2897	88	3.04
A23	RADIOACTIVITY AND ELECTROMAGNETIC TRANSACTIONS	1067	28	2.62
A24	NUCLEAR REACTIONS AND SCATTERING: GENERAL	1658	41	2.47
A25	NUCLEAR REACTIONS AND SCATTERING: SPECIFIC REACTIONS	3221	90	2.79
A27	PROPERTIES OF SPECIFIC NUCLEI LISTED BY MASS RANGES	2689	81	3.01
A28	NUCLEAR ENGINEERING AND NUCLEAR POWER STUDIES	6293	68	1.08

Table 7 contd.

Class #	Field, Subfield	World	India	%
A29	EXPERIMENTAL METHODS AND INSTRUMENTATION FOR ELEMENTARY PARTICLE AND NUCLEAR PHYSICS	5110	74	1.45
A3	**ATOMIC AND MOLECULAR PHYSICS**	**12243**	**347**	**2.83**
A31	THEORY OF ATOMS AND MOLECULES	4721	110	2.33
A32	ATOMIC SPECTRA AND INTERACTIONS WITH PHOTONS	2061	56	2.72
A33	MOLECULAR SPECTRA AND INTERACTIONS WITH PHOTONS	4819	130	2.70
A34	ATOMIC AND MOLECULAR COLLISION PROCESSES AND INTERACTIONS	2714	80	2.95
A35	PROPERTIES OF ATOMS AND MOLECULES INSTRUMENTS AND TECHNIQUES	4108	116	2.82
A36	STUDIES OF SPECIAL ATOMS AND MOLECULES	1797	39	2.17
A4	**CLASSICAL AREAS OF PHENOMENOLOGY**	**31056**	767	2.47
A41	ELECTRICITY AND MAGNETISM FIELDS AND CHARGED PARTICLES	2028	25	1.23
A42	OPTICS	15421	232	1.50
A43	ACOUSTICS	3339	80	2.40
A44	HEAT FLOW, THERMAL AND THERMODYNAMIC PROCESSES	626	27	4.31
A46	MECHANICS, ELASTICITY, RHEOLOGY	4602	205	4.45
A47	FLUID DYNAMICS	6543	246	3.76
A5	**FLUIDS, PLASMAS AND ELECTRIC DISCHARGES**	**5625**	**133**	**2.36**
A51	KINETIC AND TRANSPORT THEORY OF FLUIDS PHYSICAL PROPERTIES OF GASES	660	15	2.27
A52	THE PHYSICS OF PLASMAS AND ELECTRIC DISCHARGES	5106	122	2.39

Table 7 contd.

Class #	Field, Subfield	World	India	%
A6	**CONDENSED MATTER: STRUCTURE, THERMAL AND MECHANICAL PROPERTIES**	**42704**	**1367**	**3.20**
A61	STRUCTURE OF LIQUIDS AND SOLIDS CRYSTALLOGRAPHY	18675	581	3.11
A62	MECHANICAL AND ACOUSTICS PROPERTIES OF CONDENSED MATTER	9427	409	4.25
A63	LATICE DYNAMICS AND CRISTAL STATISTICS	2141	104	4.86
A64	EQUATIONS OF STATE, PHASE EQUILIBRIA, AND PHASE TRANSITIONS	9193	350	3.81
A65	THERMAL PROPERTIES OF CONDENSED MATTER	1948	75	3.85
A66	TRANSPORT PROPERTIES OF CONDENSED MATTER (NONELECTRONIC)	2984	117	3.92
A67	QUANTUM FLUIDS AND SOLIDS LIQUID AND SOLID HELIUM	624	4	0.64
A68	SURFACES AND INTERFACES THIN FILMS AND WHISKERS	14285	261	1.83
A7	**CONDENSED MATTER: ELECTRONIC STRUCTURE, ELECTRICAL, MAGNETIC AND OPTICAL PROPERTIES**	**41777**	**1377**	**3.30**
A71	ELECTRON STATES	8285	226	2.73
A72	ELECTRONIC TRANSPORT IN CONDENSED MATTER	6221	328	5.27
A73	ELECTRONIC STRUCTURE AND ELECTRICAL PROPERTIES OF SURFACES, AND THIN FILMS	7154	179	2.50
A74	SUPERCONDUCTIVITY	8611	364	4.23
A75	MAGNETIC PROPERTIES AND MATERIALS	7226	188	2.60
A76	MAGNETIC PROPERTIES AND MATERIALS CONDENSED MATTER MOSSBAUER EFFECT	3381	128	3.79
A77	DIELECTRIC PROPERTIES AND MATERIALS	3028	166	5.48
A78	OPTICAL PROPERTIES AND CONDENSED MATTER SPECTROSCOPY AND OTHER INTERACTIONS OF MATTER WITH PARTICLES AND RADIATION	12028	366	3.04
A79	ELECTRON AND ION EMISSION BY LIQUIDS AND SOLIDS IMPACT PHENOMENA	4151	77	1.85

Table 7 contd.

Class #	Field, Subfield	World	India	%
A8	**CROSS-DISCIPLINARY PHYSICS AND RELATED AREAS OF SCIENCE AND TECHNOLOGY**	**41883**	**1167**	**2.79**
A81	MATERIALS SCIENCE	21507	744	3.46
A82	PHYSICAL CHEMISTRY	7461	201	2.69
A86	ENERGY RESEARCH AND ENVIRONMENTAL SCIENCE	4431	188	4.24
A87	BIOPHYSICS, MEDICAL PHYSICS, AND BIOMEDICAL ENGINEERING	11560	142	1.23
A9	**GEOPHYSICS, ASTRONOMY AND ASTROPHYSICS**	**22673**	**674**	**2.97**
A91	SOLID EARTH PHYSICS	4808	123	2.56
A92	HYDROSPHERIC AND LOWER ATMOSPHERIC PHYSICS	5683	183	3.22
A93	GEOPHYSICAL OBSERVATIONS, INSTRUMENTATION, AND TECHNIQUES	6408	207	3.23
A94	AERONOMY, SPACE PHYSICS, AND COSMIC RAYS	2467	125	5.07
A95	FUNDAMENTAL ASTRONOMY AND ASTROPHYSICS, INSTRUMENTATION AND TECHNIQUES AND ASTRONOMICAL OBSERVATIONS	8072	214	2.65
A96	SOLAR SYSTEM	2703	59	2.18
A97	STARS	4101	100	2.44
A98	STELLAR SYSTEMS GALACTIC AND EXTRAGALACTIC OBJECTS AND SYSTEMS UNIVERSE	5196	141	2.71
	Total	**589951**	**16610**	

Table 8: World literature of physics classified by major subject groups
***INSPEC* (Physics Abstracts) 1992**

Major Class	a0	a1	a2	a3	a4	a5	a6	a7	a8	a9	Total	%
WORLD	28459	9695	16225	12243	31056	5625	42704	41777	41883	22673	170998	
USA	7148	2785	4819	3754	8954	1429	10369	8866	12599	7355	46672	27.29
JAPAN	2096	580	1498	755	2775	518	5936	5899	5362	984	16583	9.69
GERMAY	1834	832	1540	1121	1468	371	3462	3559	2827	1061	12294	7.18
UK	1704	379	618	663	1837	258	2229	1884	2553	1340	9213	5.38
FRANCE	1361	397	727	661	1470	217	2606	2392	1795	1013	8439	4.94
CHINA	1036	269	460	280	1344	190	1773	1638	1372	681	6028	3.52
RUSSIA	751	316	418	450	1027	309	1206	1467	711	586	5070	2.96
CANADA	796	292	448	484	951	119	897	811	1238	890	4970	2.91
ITALY	978	550	613	342	672	137	949	1005	918	674	4837	2.83
INDIA	646	265	294	347	767	133	1367	1377	1167	674	4719	2.76
NETHERLANDS	372	91	175	183	381	60	636	709	720	324	2552	1.49
SPAIN	369	140	119	227	279	40	582	625	474	309	2188	1.28
AUSTRALIA	344	60	61	133	471	65	367	305	547	447	2051	1.20
TAIWAN	177	54	105	62	353	11	411	328	457	46	1273	0.74
ISRAEL	254	64	59	111	306	32	228	285	313	137	1278	0.74
SOUTH KOREA	169	85	131	34	156	19	519	374	522	46	1230	0.71

Table 9: Indian institutions publishing papers as seen from *INSPEC* (Physics Abstracts) 1992 (arranged by number of papers)

Sl #	Institution	# of papers
1	Indian Inst. of Sci., Bangalore	289
2	Bhabha Atomic Res. Centre, Bombay	246
3	Tata Inst. of Fundamental Res., Bombay	176
4	Indian Inst. of Technol., Delhi	164
5	Banaras Hindu Univ., Varanasi	156
6	Indian Inst. of Technol., Madras	153
7	Jadavpur Univ., Calcutta	125
8	Indian Inst. of Technol., Kharagpur	124
9	Nat. Phys. Lab., Delhi	123
10	Indian Inst. of Technol., Kanpur	104
11	Indian Assoc. for the Cult. of Sci., Calcutta	97
12	Saha Inst. of Nucl. Phys., Calcutta	92
13	Indian Inst. of Technol., Bombay	85
14	Delhi University, Delhi	76
15	Indira Gandhi Centre for Atomic Res., Kalpakkam	74
16	Calcutta Univ., Calcutta	69
17	Poona University, Pune	69
18	Hyderabad Univ., Hyderabad	68
19	Inst. of Phys., Bhubaneshwar	65
20	Sri Venkateswara Univ., Tirupati	59
21	Phys. Res. Lab., Ahmedabad	59
22	Osmania Univ., Hyderabad	54
23	Panjab Univ., Chandigarh	48
24	Roorkee University, Roorkee	47
25	Univ. of Rajasthan, Jaipur	42
26	Vikram Sarabhai Space Centre, Trivandrum	39
27	Cochin Univ. of Sci. & Technol., Cochin	37
28	Defence Metall. Res. Lab., Hyderabad	36
29	Nat. Chem. Lab., Pune	35
30	Indian Inst. of Astrophys., Bangalore	33
31	Anna Univ., Madras	31
32	Andhra Univ., Visakhapatnam	31
33	Indian Inst. of Tropical Meteorol., Pune	30
34	Raman Res. Inst., Bangalore	29
35	Nat. Inst. of Oceanogr., Dona Paula	29
36	Himachal Pradesh University, Shimla	28
37	Nat. Geophys. Res. Inst., Hyderabad	27
38	Maharshi Dayanand University, Rohtak	24
39	Indian Stat. Inst., Calcutta	24
40	Inst. of Math. Sci., Madras	24

Table 9 contd.

41	Aligarh Muslim Univ., Aligarh	23
42	Variable Energy Cyclotron Centre, Calcutta	23
43	North Bengal Univ., Darjeeling	22
44	Central Electrochem. Res. Inst., Karaikudi	22
45	Uttar Pradesh State Obs., Naini Tal	22
46	Gorakhpur University, Gorakhpur	21
47	Shivaji University, Kolhapur	21
48	Devi Ahilya Univ., Indore	20
49	Guru Nanak Dev Univ., Amritsar	20
50	Centre for Adv. Technol., Indore	20
51	Rani Durgavati Univ., Jabalpur	19
52	Nat. Metal. Lab., Jamshedpur	19
53	Regional Res. Lab. Bhopal	19
54	Regional Res. Lab. Thiruvananthapuram	19
55	Allahabad University, Allahabad	18
56	Kalyani Univ., Kalyani	18
57	Pondicherry University, Pondicherry	18
58	Visva Bharati Univ., Santiniketan	18
59	Gaya Coll., Gaya	17
60	Indian Sch. of Mines, Dhanbad	17
61	North Eastern Hill Univ., Shillong	17
62	Utkal Univ., Bhubaneswar	17
63	Inst. of Plasma Res., Ahmedabad	17
64	Berhampur Univ., Berhampur	16
65	Jawaharlal Nehru Univ., Delhi	16
66	Karnatak University, Dharwad	16
67	Kerala Univ., Trivandrum	16
68	Madras University	16
69	Madurai Kamaraj University, Madurai	16
70	Bose Inst., Calcutta	16
71	Manipur Univ., Imphal	15
72	Vikram Univ., Ujjain	15
73	S.N. Bose Nat. Centre for Basic Sci., Calcutta	15
74	Nagpur University, Nagpur	14
75	Indian Inst. of Geomagnetism, Bombay	14
76	Solid State Phys. Lab., Delhi	14
77	Central Glass & Ceramic Res. Inst., Calcutta	14
78	Nat. Aerospac. Lab., Bangalore	14
79	Bharathidasan Univ., Tiruchirapalli	13
80	Maharaja Sayajirao Univ., Vadodara	13
81	Mysore Univ., Mysore	13
82	Barkatullah Univ., Bhopal	12
83	Bombay University, Bombay	12
84	Kurukshetra Univ., Kurukshetra	12
85	Bhagalpur University, Bhagalpur	11

Table 9 contd.

86	Jodhpur University, Jodhpur	11
87	Sardar Patel Univ., Vallabh Vidyanagar	11
88	Saurashtra Univ., Rajkot	11
89	Sri Krishnadevaraya Univ., Anantapur	11
90	Space Applications Centre, Ahmedabad	11
91	Harcourt Butler Technol. Inst., Kanpur	10
92	MNR Eng. Coll., Allahabad	10
93	Burdwan University, Burdwan	10
94	Kakatiya Univ., Warangal	10
95	Indian Inst. of Mech. of Continua, Calcutta	10
96	Bengal Eng. Coll., Howrah	9
97	Bharathiar University, Coimbatore	9
98	Gauhati Univ., Guwahati	9
99	Marathawada Univ., Aurangabad	9
100	Punjabi Univ., Patiala	9
101	Indian Inst. of Astrophys., Alangayam	9
102	Naval Phys. & Oceanogr. Lab., Cochin	9
103	Agra Coll., Agra	8
104	Annamalai Univ., Annmalainagar	8
105	Bangalore University, Bangalore	8
106	Dr. Hari Singh Gour Vishwavidyalaya, Sagar	8
107	Mahatma Gandhi Univ., Kottayam	8
108	ISRO Satellite Centre, Bangalore	8
109	Central Sci. Instrum. Organ., Chandigarh	8
110	Malviya Regional Eng. Coll., Jaipur	7
111	Agra Univ., Agra	7
112	Mangalore Univ., Mangalore	7
113	Steel Authority of India Ltd., Ranchi	7
114	Reg. Eng. Coll., Durgapur	6
115	Cotton Coll., Gauhati	6
116	R B S Coll., Agra	6
117	Gujarat University, Ahmedabad	6
118	Jamia Millia Islamia, Delhi	6
119	Kumaun University, Nainital	6
120	Lucknow University, Lucknow	6
121	Meerut Univ., Meerut	6
122	Nagarjuna Univ., Nagarjuna Nagar	6
123	Ravishankar Univ., Raipur	6
124	Instrum. Res. & Dev. Establ., Dehra Dun	6
125	Indian Inst. of Chem. Technol., Hyderabad	6
126	Reg. Eng. Coll., Rourkela	5
127	V.H.N.S.N. Coll., Virudhunagar	5
128	Punjab Agric. Univ., Ludhiana	5
129	H.N.B. Garhwal Univ., Srinagar (U.P)	5
130	India Meteorol. Dept., Delhi	5

Table 9 contd.

131	Central Electron. Eng. Res. Inst., Pilani	5
132	Regional Res. Lab., Bhubaneswar	5
133	Acharya Prafulla Chandra Coll., Barrackpore	4
134	Basirhat Coll., Parganas	4
135	BKC Coll., Calcutta	4
136	Govt. Nehru Coll., Sagar	4
137	Inst. of Sci., Bombay	4
138	SCPG Coll., Ballia (U P)	4
139	VSSD Coll., Kanpur	4
140	Bihar Univ., Muzuffarpur	4
141	Dibrugarh Univ., Dibrugarh	4
142	Magadh Univ., Bodh-Gaya	4
143	Vidyasagar University, Midnapore	4
144	Central Power Res. Inst., Bangalore	4
145	Nat. Council of Educ. Res. & Training, Delhi	4
146	Bharat Heavy Electrical Limited, Hyderabad	4
147	Dept. of Sci. & Technol., Delhi	4
148	Hindustan Lever Research Center, Bombay	4
149	Tata Iron & Steel Co. Ltd., Jamshedpur	4
150	Central Leather Res. Inst., Madras	4
151	Central Mech. Eng. Res. Inst., Durgapur	4
152	Karnataka Regional Eng. Coll., Srinivasnagar	3
153	Madras Inst. of Technol., Madras	3
154	M.M.M. Eng. Coll., Gorakhpur	3
155	S G S Inst. of Technol. & Sci., Indore	3
156	American Coll., Madurai	3
157	Bangabasi Morning Coll., Calcutta	3
158	DAV Coll., Kanpur	3
159	Govt. Post Graduate Coll., Rishikesh	3
160	Hooghly Moshin Coll., Hooghly	3
161	P.K. Coll., Midnapore	3
162	Presidency Coll., Calcutta	3
163	S T Hindu Coll., Nagercoil	3
164	St John's Coll., Agra	3
165	St Xavier's Coll., Trivandrum	3
166	G.B. Pant Univ. of Agric. & Technol., Pantnagar	3
167	Bhopal Univ., Bhopal	3
168	Jammu Univiversity, Jammu Tawi	3
169	Sambalpur Univ., Sambalpur	3
170	Bharat Heavy Electricals Ltd., Tiruchirapalli	3
171	Indian Meteorol. Dept., Pune	3
172	Jawaharlal Nehru Centre for Adv. Sci. Res., Bangalore	3
173	Tata Res. Dev. & Design Centre, Pune	3
174	Central Arid Zone Res. Inst., Jodhpur	3
175	Bhabha Atomic Res. Centre, Srinagar	3

176	Central Building Res. Inst., Roorkee	3
177	Central Salt & Marine Chem. Res. Inst., Bhavnagar	3
178	Nat. Environ. Eng. Res. Inst., Nagpur	3
179	North Eastern Regional Inst. of Sci. & Technol., Itanagar	3
180	Brindavan Soc., Thane	3
181	Regional Eng. Col., Hamirpur	2
182	Regional Eng. Coll., Kurukshetra	2
183	Regional Eng. Coll., Warangal	2
184	Regional Inst. of Technol., Jamshedpur	2
185	SRKR Eng. Coll., Bhimavaram	2
186	Thapar Inst. of Eng. & Technol., Patiala	2
187	Tripura Eng. Coll., Agartala	2
188	V.R. Siddhartha Eng. Coll., Vijayawada	2
189	Alipurduar Coll., Jalpaiguri	2
190	Ayya Nadar Janaki Ammal Coll, (Autonomous), Sivakasi	2
191	Banki Coll., Cuttack	2
192	Behala Coll., Parnasree	2
193	D.N. Coll., Meerut	2
194	Ewing Christian Coll., Allahabad	2
195	Gov. Post-Graduate Coll., Sawaimadhopur	2
196	Jawahar Navodaya Vidyalaya, Agartala	2
197	Lajpat Rai Coll., Sahibabad	2
198	Milind Coll. of Sci., Aurangabad	2
199	MSJ (Autonomous) Coll., Bharatpur	2
200	National College, Tiruchirapalli	2
201	Nehru Coll., Chhibramau (U P)	2
202	Post-Graduate Coll. of Sci., Hyderabad	2
203	Presidency Coll., Madras	2
204	Ranaghat Coll., Nadiad	2
205	Regional Coll. of Educ., Bhubaneswar	2
206	R.K. Mission Vidyamandira, Howrah	2
207	RLSY Coll., Jehanabad	2
208	R.S. Mahavidyalaya, Midnapore	2
209	Sivanthi Aditanar Coll., Nagercoil	2
210	SV Coll., Aligarh	2
211	Haryana Agric. Univ., Hisar	2
212	Orissa Univ. of Agric. & Technol., Bhubaneswar	2
213	Bhavnagar Univ., Bhavnagar	2
214	Bundelkhand Univ., Jhansi	2
215	Dayalbagh Educational Inst., Agra	2
216	Jiwaji Univ., Gwalior	2
217	All India Inst. of Med. Sci., Delhi	2
218	Sree Chitra Tirunal Inst. for Med. Sci. & Technol., Trivandrum	2
219	Dept. of Telecommun., Siliguri	2
220	Chittaranjan Nat. Cancer Inst., Calcutta	2

Table 9 contd.

221	Keshava Deva Malaviya Inst. of Petrol. Exploration, (ONGC) Dehra Dun	2
222	ISRO, Bangalore	2
223	Centre of Plasma Phys., Guwahati	2
224	Inst. of Paper Technol., Saharanpur	2
225	Indian Renewable Energy Dev. Agency, Delhi	2
226	Nehru Planetarium, Bombay	2
227	SAMEER, Bombay	2
228	Advanced Numerical Res & Analysis Group, Hyderabad	2
229	Defence Electron. Applications Lab., Dehra Dun	2
230	Defence Sci. Centre, Delhi	2
231	Inst. of Nucl. Med. & Allied Sci., Delhi	2
232	Central Drug Res. Inst., Lucknow	2
233	Indian Inst. of Chem. Biol., Calcutta	2
234	Indian Inst. of Petroleum, Dehradun	2
235	Centre for Earth Sci. Studies Trivandrum	2
236	Coll. of Fisheries, Cochin	1
237	AC Technol., Madras	1
238	Coll. of Eng., Madras	1
239	Delhi Coll. of Eng., Delhi	1
240	Gov. Coll. of Leather Technol., Calcutta	1
241	Inst. of Eng. & Technol., Lucknow	1
242	KLE Soc. Eng. Coll., Belgaum	1
243	MA Coll. of Technol., Bhopal	1
244	Maharashtra Inst. of Technol., Pune	1
245	NBKR Inst. of Sci. & Technol., Nellore	1
246	Regional Eng. Coll., Guwahati	1
247	Bengal Eng. Coll., Howrah	1
248	Reg. Eng. Coll., Tiruchirapalli	1
249	SDM Coll. of Eng. & Technol., Dharwad	1
250	SV Regional Coll. of Eng. & Technol., Surat	1
251	Univ. Coll. of Eng., Burla	1
252	Visvesvaraya Regional Coll. of Eng., Nagpur	1
253	Acharya B.N. Seal Coll., Coochh Behar (W B)	1
254	Alagappa Gov. Arts Coll., Karaikudi	1
255	A.M. Jain Coll., Madras	1
256	Atma Ram Satatan Dharam Coll., Delhi	1
257	AVVM Sri Pushpam Coll., Poondi	1
258	B B Coll., Parganas	1
259	Bhilai Mahila Mahavidyalaya, Bhilai	1
260	Bharata Mata Coll., Cochin	1
261	Bipin Bihari Coll., Jhansi	1
262	BK Girls' Coll., Howrah	1
263	Buxi Jagabandhu Bidyadhar Coll., Bhubaneswar	1
264	CBM Coll., Coimbatore	1
265	City Coll., Calcutta	1

Table 9 contd.

266	Darjeeling Gov. Coll., Darjeeling	1
267	D.A.V. Coll., Chandigarh	1
268	D.A.V. Coll., Dehra Dun	1
269	D.B.S. Coll., Kanpur	1
270	Fakir Chand Coll., Parganas	1
271	Gov. Central Textile Inst. Kanpur	1
272	Gujranwala Guru Nanak Khalsa Coll., Ludhiana	1
273	G.J. Coll. Patna	1
274	Government Arts Coll., Tiruvannamalai	1
275	Govern. Coll., Adampur	1
276	Gov. Coll., Ajmer	1
277	Gov. Coll., Narsinghgarh	1
278	Gov. Coll., Rohtak	1
279	Gov. Coll. Sawaimadhopur (RN)	1
280	Gov. Nehru Coll., Deori	1
281	Govt. PG Coll., Dehra Dun	1
282	Govt. P.G. Coll., Kotdwara	1
283	Gov. Vidarbha Mahavidyalaya, Amravati	1
284	G.S. Degree Coll., Jaunpur	1
285	Guru Nanak Khalsa Coll., Yamuna Nagar	1
286	Indian Inst. of Manage., Ahmedabad	1
287	Inst. of Sci., Aurangabad	1
288	Inst. of Sci., Nagpur	1
289	J.J. Coll., Bombay	1
290	Katwa Coll., Burdwan	1
291	Kisan Coll., Nalanda	1
292	Kittel Sci. Coll., Dharwad	1
293	Kongunda Arts & Sci. Coll., Coimbatore	1
294	Krishna Mahavidyalaya, Rethare	1
295	KTHM Coll., Nasik	1
296	K.V. Sci. Coll.,	1
297	Lakshmi Bai Coll., Delhi	1
298	L N Coll., Jarsuguda	1
299	L.N. Coll., Jagatpur	1
300	Loyola Coll., Madras	1
301	Maulana Acad. Coll., Calcutta	1
302	Maharajas Coll., Kochi	1
303	Malda Coll.,	1
304	MLN Coll., Haryana	1
305	M M Coll., Bhagalpur	1
306	Netaji Nagar Day Coll., Calcutta	1
307	Nizam Coll., Hyderabad	1
308	Naihati R.B.C. Coll.,	1
309	Parle Coll., Bombay	1
310	Pachaiyappa's Coll., Madras	1

311	P.D. Women's Coll., Jalpaiguri	1
312	Gov. Post-graduate Coll., Rishikesh	1
313	Pingla Thana Mahavidyalaya, Midnapore	1
314	P. M. B. Gujarati Sci. Coll., Indore	1
315	PSG Autonomous Coll. of Arts & Sci., Coimbatore	1
316	Ravenshaw Coll., Cuttack	1
317	Raja Peary Mohan Coll., Hooghly	1
318	Raja Rammohan Roy Coll., Hooghly	1
319	RBS Coll., Bichpuri	1
320	Regional Coll. of Educ., Mysore	1
321	Saradavilas Coll., Mysore	1
322	Saifla Coll., Bhopal	1
323	S.B. Coll. of Sci., Aurangabad	1
324	SGRR (Post Graduate Coll.), Dehra Dun	1
325	Shri Shivaji Sci. Coll., Amravati	1
326	Shri Varshney Coll., Aligarh	1
327	Sindhu Mahavidyalaya, Nagpur	1
328	Siliguri Coll., Siliguri	1
329	S.M.S.G. Coll.,	1
330	Sri Venkatewara Coll., Delhi	1
331	S.S.V. Coll., Bhagalpur	1
332	St. Berchmans' Coll.,	1
333	St. Xavier's Coll., Calcutta	1
334	S.V.P. Coll., Bhabua	1
335	TNB Coll., Bhagalpur	1
336	Vardhman Post-Graduate Coll., Bijnor	1
337	Ramakrishna Mission Vivekananda Coll., Madras	1
338	Vidyasagar Evening Coll., Calcutta	1
339	Vidarbha Mahavidyalaya, Amravati	1
340	VS Patel Coll. of Arts & Sci., Billimora	1
341	Warana Mahavidyalaya, Warananager	1
342	Y.S. Palpara Coll., Midnapore	1
343	Kasturba Med. Coll., Manipal	1
344	M.C. Coll., Barpeta	1
345	Med. Coll., Trivandrum	1
346	K.L. Polytech., Roorkee	1
347	Tamil Nadu Agric. Univ., Coimbatore	1
348	Alagappa Univ., Karaikudi	1
349	Andhra Pradesh Univ., Hyderabad	1
350	Birla Inst. of Technol., Ranchi	1
351	Calicut Univ., Calicut	1
352	Goa Univiversity, Bambolim	1
353	Gulbarga University, Gulbarga	1
354	Indira Gandhi Nat. Open Univ., Delhi	1
355	Jawaharlal Nehru Technol. Univ., Hyderabad	1

Table 9 contd.

356	Kanpur Univ., Kanpur	1
357	Mohanlal Sukhadia Univ., Udaipur	1
358	Patna Univ., Patna	1
359	Sri Sathya Sai Institute of Higher Learning, Prasanthinilayam	1
360	Sukhadia University, Udaipur	1
361	Indian Telephone Ind. Ltd., Bangalore	1
362	Technical Teachers Training Inst., Calcutta	1
363	All India Radio & Doordarshan, New Delhi	1
364	Bharat Heavy Plate & Vessels Ltd., Visakhapatnam	1
365	Oil & Natural Gas Comm., Chandkheda	1
366	Oil & Natural Gas Comm., Madras	1
367	Geol. Survey of India, Bangalore	1
368	Geol. Survey of India, Calcutta	1
369	Geol. Survey of India, Lucknow	1
370	Geol. Survey of India, Shillong	1
371	Steel Authority of India Ltd., Durgapur	1
372	Visvesvaraya Iron & Steel Ltd., Bhadravati	1
373	Indian Inst. of Astrophys., Kodaikanal	1
374	Indian Space Res. Organ., Ahmedabad	1
375	ISRO SHAR Centre, Sriharikota	1
376	Nat. Remote Sensing Agency, Hyderabad	1
377	Regional Remote Sensing Service Centre, Jodhpur	1
378	Saha Inst. of Nucl., Calcutta	1
379	Survey of India, Dehra Dun	1
380	Tata Inst Fundamental Res, Bombay	1
381	Wadia Inst. of Himalayan Geol., Dehradun	1
382	Central Soil & Mater. Res. Station, Delhi	1
383	Bharat Heavy Electr. Ltd., Tiruchirapalli	1
384	Atomic Energy Regulatory Board, Bombay	1
385	Atomic Energy Regulatory Board, Calcutta	1
386	ARC, Bombay	1
387	Basic Sci. Inst., Agra	1
388	DET QA, Bhopal	1
389	Energy Manage. Centre., Delhi	1
390	Goodwill Cryogenics, Bombay	1
391	Indian Inst. of Chem., Delhi	1
392	Ind. Syndicate, Calcutta	1
393	Inter-Univ. Consortium for DAE Facilities, Calcutta	1
394	Nat. Council of Appl. Econ. Res., Delhi	1
395	Nat. Sample Survey Organ., Calcutta	1
396	Pulp & Paper Res. Inst.,	1
397	Radio Astron. Centre, Udhagamandalam	1
398	Sangeet Res. Acad., Calcutta	1
399	S.R. Lab. for Studies on Crystallization Phenomena, Hanumakonda	1
400	VRCE, Nagpur	1

Table 9 contd.

401	Alchem. Res. Centre, Thane	1
402	Asiatic Gases Ltd., Thane	1
403	Command Hospital, Lucknow	1
404	French. Inst., Pondicherry	1
405	India Lead-Zinc Inf. Centre, Delhi	1
406	Keen Williams Ltd., Calcutta	1
407	MECON India Ltd., Ranchi	1
408	OPTEL Telecommun. Ltd., Bhopal	1
409	Schlumberger (India), Delhi	1
410	Thapar Corporate Res. & Dev. Centre, Patiala	1
411	Central Soil Salinity Res. Inst., Kamal	1
412	Water Technol. Centre, Delhi	1
413	Atomic Energy Comm., Bombay	1
414	Tata Memorial Centre, Bombay	1
415	Armament Res & Dev Establishment, Pune	1
416	Centre for Aeronaut. Syst. Studies & Anal., Bangalore	1
417	Defence Lab., Jodpur	1
418	Defence Mater. & Stores Res. & Dev. Establ., Kanpur	1
419	Explosives Res. & Dev. Lab., Pashan, Pune	1
420	Gas Turbine Res. Establ., Bangalore	1
421	Inst. of Armament Technol., Pune	1
422	Naval Chem. & Metall. Lab., Bombay	1
423	Terminal Ballistics Res. Lab., Chandigarh	1
424	Central Electrochem Res Inst, Madras	1
425	Central Fuel Res. Inst., Dhanbad	1
426	Central Inst. of Medicinal & Aromatic Plants, Lucknow	1
427	Central Min. Res. Station, Dhanbad	1
428	Council of Sci. & Ind. Res., Madras	1
429	Ind. Toxicology Res. Centre, Lucknow	1
430	Nat. Inst. of Oceanogr., Visakhapatnam	1
431	Regional Res. Lab., Jorhat	1
432	Structural Eng. Res. Centre, Madras	1
433	Inst. of Adv. Study in Sci. & Technol., Guwahati	1
434	Drought Monitoring Cell, Bangalore	1
435	Kidwai Memorial Inst. of Oncology, Bangalore	1
436	Karnataka State Council for Sci. & Technol., Bangalore	1
437	Madhya Pradesh Council of Sci. Technol., Bhopal	1
438	Orissa Renewable Energy Dev. Agency, Orissa	1
439	Calcutta Port Trust, Murshidabad	1
440	Gov. of West Bengal, Jalpaiguri	1
441	Math. Sci. Trust Soc., New Delhi	1
	Total	4719

Table 10: Contributions made by different organisation as seen from *INSPEC* (Physics Abstracts) 1992

Academic	-	2964
Research	-	1191
Central Ministries	-	467
State Govt	-	35
Private	-	21
Society	-	14
Unclassified	-	27
		4719

Academic

Universities

General	-	2617
Agriculture	-	13
Medical	-	4
		2634

Colleges

General	-	234
Engineering	-	91
Medical	-	3
Agriculture	-	1
Polytechnic	-	1
		330

Research Institutions

Dept of Atomic Energy	-	727
Council Sci Indus Res	-	377
Defence Res Dev Orgn	-	82
Indian Coun Agri Res	-	5
		1191

Central Ministries

Science & Technology	-	401
Planning	-	24
Steel & Mines	-	13
Industry	-	8
Human Resource Develop	-	5
Energy	-	4
Petroleum	-	4
Communications	-	3
Health & Family Welf	-	2
Water Resources	-	2
Inform & Broadcasting	-	1
		467

Table 11: Indian cities contributing in the field of physics as seen from *INSPEC* (Physics Abstracts) 1992 (arranged by number of papers)

Sl #	City	# of papers	Sl #	City	# of papers
1	BOMBAY	554	49	BERHAMPUR	16
2	CALCUTTA	514	50	JODHPUR	16
3	DELHI	434	51	IMPHAL	15
4	BANGALORE	397	52	MYSORE	15
5	MADRAS	243	53	UJJAIN	15
6	HYDERABAD	203	54	BHAGALPUR	14
7	VARANASI	156	55	KURUKSHETRA	14
8	PUNE	145	56	AURANGABAD	13
9	KANPUR	125	57	COIMBATORE	13
10	KHARAGPUR	124	58	HOWRAH	13
11	AHMEDABAD	95	59	LUCKNOW	13
12	BHUBANESWAR	92	60	VADODARA	13
13	THIRUVANANDAPURAM	82	61	PATIALA	12
14	KALPAKKAM	74	62	SAGAR	12
15	TIRUPATI	59	63	WARANGAL	12
16	CHANDIGARH	58	64	ANANTHAPUR	11
17	ROORKEE	51	65	BURDWAN	11
18	COCHIN	49	66	DURGAPUR	11
19	JAIPUR	49	67	MIDNAPORE	11
20	INDORE	44	68	RAJKOT	11
21	BHOPAL	39	69	VALLABH VIDYANAGAR	11
22	VISHAKAPPATNAM	33	70	ALANGAYAM	9
23	ALLAHABAD	30	71	RANCHI	9
24	DONA PAULA	29	72	ANNAMALAINAGAR	8
25	NAINITAL	28	73	KOTTAYAM	8
26	SIMLA	28	74	MEERUT	8
27	AGRA	27	75	MANGALORE	7
28	ALIGARH	26	76	LUDHIANA	6
29	JAMSHEDPUR	25	77	NAGARJUNA NAGAR	6
30	ROHTAK	25	78	PARGANAS	6
31	GORAKHPUR	24	79	RAIPUR	6
32	KARAIKUDI	24	80	BHAVNAGAR	5
33	DARJEELING	23	81	HOOGLY	5
34	KOLHAPUR	21	82	NAGERKOIL	5
35	NAGPUR	21	83	PILANI	5
36	AMRITSAR	20	84	ROURKELA	5
37	DHANBAD	19	85	SRINAGAR (U P)	5
38	GUWAHATI	19	86	THANE	5
39	JABALPUR	19	87	VIRUDUNAGAR	5
40	MADURAI	19	88	AGARTALA	4
41	PONDICHERRY	19	89	BALLIA	4
42	TIRUCHIRAPALLI	19	90	BARRACKPORE	4
43	DHARWAD	18	91	BODH GAYA	4
44	KALYANI	18	92	DIBRUGARH	4
45	SHANTINIKETAN	18	93	JALPAIGURI	4
46	SHILLONG	18	94	MUZAFFARPUR	4
47	DEHRA DUN	17	95	RISHIKESH	4
48	GAYA	17	96	AMRAVATI	3

Table 11 contd.

Sl #	City	# of papers	Sl #	City	# of papers
97	CUTTACK	3	132	BICHPURI	1
98	ITANAGAR	3	133	BURLA	1
99	JAMMU TAWI	3	134	CALICUT	1
100	JHANSI	3	135	CHANDKHEDA	1
101	PANTNAGAR	3	136	COOCH BEHAR	1
102	SAMBALPUR	3	137	DEORIA	1
103	SAWAI MADHOPUR	3	138	GULBARGA	1
104	SILIGURI	3	139	HANUMAKONDA	1
105	SRINAGAR	3	140	JARSUGUDA (OA)	1
106	SRINIVASANAGAR	3	141	JAUNPUR	1
107	BHARATPUR	2	142	JAGATPUR (OA)	1
108	BHIMAVARAM (AP)	2	143	JORHAT	1
109	CHHIBRAMAU (UP)	2	144	KARNAL	1
110	GWALIOR	2	145	KODAIKANAL	1
111	HISAR	2	146	KOTDWARA	1
112	HAMIPUR	2	147	MANIPAL	1
113	JEHANABAD (BR)	2	148	MURSHIDABAD	1
114	NADIA	2	149	NARASINGARH	1
115	PARNASREE	2	150	NASIK	1
116	PATNA	2	151	NELLORE	1
117	SAHIBABAD	2	152	NALANDA	1
118	SAHARANPUR	2	153	POONDI	1
119	SIVAKASI	2	154	PRASANTHINILAYAM	1
120	UDAIPUR	2	155	RETHARE	1
121	VIJAYAWADA	2	156	SRIHARIKOTA	1
122	ADAMPUR	1	157	SURAT	1
123	AJMER	1	158	THIRUVANNAMALAI	1
124	BARPETA (AM)	1	159	UDAGAMANDALAM	1
125	BAMBOLIM	1	160	WARANA NAGAR	1
126	BELGAUM	1	161	YAMUNA NAGAR	1
127	BHILAI	1			
128	BHADRAVATI	1		UNKNOWN	8
129	BHABUA	1			
130	BIJNORE	1		Total	4719
131	BILLIMORA (GT)	1			

Table 12: Indian states contributing in the field of physics as seen from *INSPEC* (Physics Abstracts) 1992 (arranged by number of papers)

Sl #	State	# of papers
1	WEST BENGAL	772
2	MAHARASHTRA	764
3	UTTAR PRADESH	536
4	KARNATAKA	444
5	DELHI	434
6	TAMIL NADU	425
7	ANDHRA PRADESH	332
8	KERALA	141
9	MADHYA PRADESH	138
10	GUJARAT	137
11	ORISSA	124
12	BIHAR	100
13	RAJASTHAN	78
14	CHANDIGARH	58
15	HARYANA	44
16	PUNJAB	39
17	GOA	30
18	HIMACHAL PRADESH	30
19	ASSAM	25
20	PONDICHERRY	19
21	MEGALAYA	18
22	MANIPUR	15
23	JAMMU & KASHMIR	6
24	TRIPURA	4
25	ARUNACHAL PRADESH	3
26	UNKNOWN	3
	Total	4719

Table 13: India's contribution to the world literature of physics categorised by leading institutions and leading journals [*INSPEC* (Physics Abstracts) 1992]

Institutions → / Journals	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	Total
Journal of Materials Science Letters	6	7	-	1	5	11	-	14	3	2	6	1	1	1	-	-	1	2	-	3	-	3	67
Pramana, Journal of Physics	6	14	10	-	4	6	1	1	4	4	0	6	1	1	5	-	2	1	4	-	4	-	74
Bulletin of Materials Science	3	15	9	2	3	8	-	2	15	3	1	1	4	1	1	-	3	5	4	2	-	5	87
Physical Review B [Condensed Matter]	16	5	11	1	5	1	2	2	4	4	3	7	4	2	1	3	1	3	-	-	-	-	75
Astrophysics and Space Science	-	-	1	-	18	-	3	2	-	-	-	-	-	1	-	4	-	-	-	-	-	2	31
Indian Journal of Pure and Applied Physics	-	5	-	3	3	2	4	1	3	-	1	2	1	1	-	1	1	-	-	-	-	-	28
Solid State Communications	9	3	7	1	-	1	-	3	8	2	1	2	1	2	-	1	2	6	1	5	-	2	57
Journal of Materials Science	10	8	-	7	10	13	-	22	3	6	11	2	2	3	2	-	2	2	-	3	-	3	109
Journal of Applied Physics	8	2	1	4	-	3	3	3	3	4	2	-	3	2	-	3	11	4	-	-	-	-	56
Journal of Physics: Condensed Matter	2	4	4	-	-	-	-	-	4	4	2	1	3	-	3	-	1	5	1	-	-	-	34
Indian Journal of Theoretical Physics	-	-	-	-	3	-	3	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	14
Physica C	7	6	9	2	2	2	-	-	1	1	1	-	1	-	1	-	2	1	-	-	-	1	37
Physica Status Solidi B	2	-	-	-	1	-	4	-	-	1	1	-	-	-	-	5	-	-	6	1	-	-	21
Indian Journal of Radio & Space Physics	-	-	-	-	3	-	-	-	8	-	-	-	-	-	-	2	2	-	-	1	2	-	18
Modern Physics Letters A	1	-	8	-	-	-	3	-	-	-	-	4	-	3	-	2	-	2	9	-	2	-	34
Physical Review A [Atomic, Molecular, and Optical Physics]	-	6	5	1	-	3	-	-	-	1	7	-	-	1	1	1	1	7	-	-	-	-	34
Indian Journal of Physics, Part B	2	1	-	-	-	1	-	-	-	-	3	7	-	1	-	1	1	1	-	-	-	-	18
Physica B	1	19	1	-	1	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	25
Crystal Research and Technology	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	11
Chemical Physics Letters	6	4	-	-	1	1	1	2	-	3	12	-	1	1	-	1	-	3	1	-	-	-	37
Journal of Physics D [Applied Physics]	1	2	-	1	1	2	-	1	1	-	1	-	-	1	1	-	2	-	-	1	-	-	15
Journal of Sound and Vibration	3	1	-	1	2	7	-	2	-	2	-	-	1	-	-	-	-	-	-	-	-	-	19
Current Science	-	3	2	-	1	-	-	-	-	1	-	-	-	-	2	-	-	-	2	-	-	-	11
Physica Status Solidi A	1	2	-	-	-	-	1	-	1	1	2	-	-	1	-	1	1	-	-	1	-	7	19

Table 13 contd.

Journals \ Institutions →	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	Total
Indian Journal of Physics, Part A	1	2	-	1	-	-	-	-	-	-	2	3	-	2	1	-	-	-	-	1	-	-	13
Physical Review C [Nuclear Physics]	-	7	1	-	2	-	-	-	-	-	-	4	1	1	-	-	-	-	3	-	2	-	21
Materials Letters	1	-	1	-	-	-	-	3	-	-	-	-	-	-	4	-	4	-	-	9	-	1	23
Physical Review A [Statistical Physics]	2	8	-	-	3	1	2	-	1	-	-	1	-	-	-	-	3	3	3	-	-	-	27
Physics Letters A	1	3	1	-	-	2	1	1	3	2	2	1	-	1	-	2	-	1	1	1	-	-	23
Thin Solid Films	2	-	-	3	-	2	1	-	3	-	3	-	1	-	-	-	4	-	-	3	-	-	22
Indian Journal of Pure and Journal of Physics A [Mathematical and General]	-	3	2	-	1	-	4	-	-	1	-	2	-	1	-	-	-	-	4	-	-	-	18
Scripta Metallurgica et Materialia	4	2	-	-	3	-	-	-	-	-	-	-	2	-	3	-	-	-	-	-	-	1	15
Physics Letters B	2	-	5	-	1	-	3	-	-	-	-	2	-	-	-	-	-	-	4	-	3	-	20
Journal of Magnetism and Magnetic Materials	-	1	12	-	-	1	-	1	-	2	3	-	2	-	-	-	1	-	-	-	-	-	23
Total	97	134	90	28	73	71	38	60	65	44	64	47	29	27	25	39	45	46	43	31	15	37	1148

A - Indian Inst Sci, Bangalore
B - Bhabha Atom Res Centre Bombay
C - Tata Inst Fund Res, Bombay
D - Indian Inst Technol, Delhi
E - Banaras Hindu Univ, Varanasi
F - Indian Inst Technol, Madras
G - Jadavpur Univ, Calcutta
H - Indian Inst Technol, Kharagpur
I - National Phys Lab, Delhi
J - Indian Inst Technol, Kanpur
K - Indian Assoc Cult Sci, Culcatta
L - Saha Inst of Nuclear Phys, Calcutta
M - Indian Inst of Technol, Bombay
N - Delhi Univ, Delhi
O - Indira Gandhi Cent Atom Res, Kalpakkam
P - Calcutta Univ, Calcutta
Q - Poona Univ, Pune
R - Hyderabad Univ, Hyderabad
S - Inst of Phys, Bhubaneswar
T - Sri Venkateswara Univ, Tirupati
U - Physical Res Lab, Ahmedabad
V - Osmania Univ, Hyderabad

Table 14: India's contribution to the journal literature of physics categorised by subfields and leading institutions [*INSPEC* (Physcis Abstracts) 1992]

Subfields	Institutions →	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	Total
01	COMMUN EDUC	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2
02	MATH METH PHYS	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
03	CLASS QUANT PHYS	1	10	4	1	-	4	7	1	-	-	5	1	-	4	1	-	-	2	3	1	-	-	45
04	RELAT GRAVITAT	-	-	6	-	2	-	2	-	-	1	-	-	1	-	-	-	4	-	-	-	2	-	18
05	STATIST PHYS THERMODYN	5	9	4	-	1	3	3	-	-	3	-	3	-	3	1	-	4	4	9	-	1	-	53
06	MEASUR SCIENCE	1	1	-	1	-	-	-	-	3	-	-	-	2	-	-	-	-	-	-	-	-	-	8
07	SPEC INSTRUM TECHNIQ	3	1	1	6	-	5	-	-	2	-	-	2	2	1	1	2	2	-	-	-	-	-	28
11	GEN THEOR FIELD PART	3	-	21	-	-	-	3	-	-	3	-	6	-	6	-	-	-	2	17	-	-	-	61
12	SPEC THEOR INTERACT MODEL	3	-	3	-	2	-	3	-	-	1	-	-	2	6	-	2	-	-	3	-	7	-	32
13	SPEC REACT PHENOM	-	2	4	-	-	-	8	-	-	1	-	1	1	2	-	2	-	-	2	-	6	-	29
21	NUCL STRUCT	-	-	1	-	-	-	-	-	-	-	-	4	2	4	-	1	-	-	6	-	6	-	24
23	RADIOACT AND ELECTROMAG	-	-	1	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	1	-	6
24	NUCL REACT SCATT GEN	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
25	NUCL REACT SCATT: SPEC REACT	-	13	2	-	4	-	7	1	-	-	1	7	-	-	-	-	2	-	6	-	-	-	43
28	NUCL ENGG NUCL POWER STUDIES	1	20	-	-	1	-	-	-	-	-	-	2	-	-	15	-	-	-	-	-	-	-	39
29	EXP METHOD INSTRUM	1	7	3	-	1	-	-	1	-	1	1	4	1	2	-	-	-	-	-	-	-	-	22
31	THEOR ATOM MOLECULE	-	-	5	-	2	-	-	5	-	-	9	-	1	3	-	-	2	6	-	-	-	-	33
32	ATOM SPECT INTERACT PHOTONS	-	6	1	-	1	1	-	1	-	2	2	2	1	-	-	1	-	2	-	-	-	-	20
33	MOL SPECT INTERACT PHOTONS	6	10	2	-	4	3	2	3	-	2	11	-	-	5	-	1	-	1	1	-	1	-	52
34	ATOM MOL COLLIS PROCES	-	-	6	-	1	1	1	-	-	2	10	-	-	6	1	2	-	-	-	-	1	-	31
35	PROP ATOM MOL	1	3	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	5
36	STUD SPECIAL ATOM MOL	2	2	1	-	1	-	1	-	1	-	1	-	-	-	2	-	-	1	-	-	-	-	12
41	ELECTRIC MAGNET	-	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	3
42	OPTICS	7	14	-	41	8	14	3	1	6	5	1	-	1	2	-	3	-	14	-	-	-	-	120
43	ACOUSTICS	4	-	-	-	2	2	-	-	2	1	1	-	-	-	-	-	-	-	-	-	-	-	12
44	HEAT FLOW THERMAL	2	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	3
46	MECH ELAST RHEOL	9	2	-	2	3	18	3	14	1	3	-	1	14	2	-	6	-	-	-	-	-	-	78
47	FLUID DYNAM	15	1	-	8	18	7	4	9	-	11	-	-	7	-	1	2	-	1	-	1	-	2	87
51	KINET TRANS THEOR FLUID	2	1	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	5
52	PHYSICS PLASMA ELECT DISCHARGE	3	5	-	6	-	-	9	-	-	4	-	9	-	-	-	2	-	-	-	-	1	-	39

Table 14 contd.

Subfields	Institutions →	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	Total
61	STRUCT LIQUID SOLID: CRYSTALL	21	18	-	-	9	5	10	5	10	2	6	2	3	3	5	2	4	1	2	-	-	2	110
62	MECH ACOUST PROP COND MATTER	2	4	-	-	1	3	5	1	1	1	2	-	2	1	-	-	-	-	-	4	-	2	29
63	LATTICE DYNAM CRYST STAT	2	5	-	4	2	-	3	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	17
64	EQUAT STATE PHASE EQUIL	14	9	-	2	6	-	-	-	3	6	1	-	-	-	3	3	-	1	-	-	-	-	48
65	THERM PROP COND MATTER	2	3	-	1	-	1	-	1	-	1	-	-	-	-	2	-	-	-	-	-	-	3	14
66	TRANS PROP COND MATTER (NONELEC)	4	6	-	-	4	3	-	2	-	1	1	-	1	-	2	-	1	-	-	-	-	1	26
67	QUANT FLUID SOLID LIQUID	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
68	SURF INTERFACE: THIN FILMS	3	1	1	5	2	1	2	7	4	2	3	3	1	2	1	-	9	1	-	4	-	-	53
71	ELECTRONIC STAT	12	1	2	1	1	-	2	2	1	2	-	1	-	1	-	1	3	1	2	1	-	-	34
72	ELECTRONIC TRANS COND MATTER	15	1	9	2	4	10	7	5	9	2	8	4	4	1	-	1	2	3	-	2	-	6	95
73	ELECTRONIC STRUC ELECT PROP SURF	1	-	-	1	1	-	8	1	3	3	4	1	1	1	-	14	4	-	-	3	-	-	46
74	SUPERCONDUCTIVITY	19	18	22	4	-	9	-	8	28	5	2	2	3	2	-	-	3	10	4	2	-	6	147
75	MAGNET PROP MATER	4	5	22	1	-	4	1	2	-	4	3	7	5	-	-	-	1	5	3	-	-	-	67
76	MAGNET RESONAN RELAX COND MATTER	4	2	3	-	-	-	2	-	1	5	-	2	3	1	-	-	-	7	-	11	-	5	46
77	DIELECT PROP MATER	5	1	-	5	1	1	-	7	9	1	-	-	-	-	-	-	-	-	-	4	-	5	39
78	OPTICAL PROP COND MATTER	11	7	5	3	3	6	-	7	6	3	7	2	4	1	2	2	1	2	7	17	-	7	103
79	ELECTRON ION EMISSION	5	-	-	-	-	4	1	1	-	-	-	4	1	-	-	1	5	-	-	-	-	-	22
81	MATER SCI	54	24	4	15	35	36	2	26	5	18	9	1	16	1	33	2	13	2	-	4	-	6	306
82	PHYS CHEM	10	10	-	1	-	2	1	1	2	-	2	-	3	1	3	-	-	-	-	-	-	-	36
86	ENER RES ENV SCI	6	2	2	43	4	4	4	1	3	2	1	-	2	4	-	-	-	-	-	4	-	2	84
87	BIOPHY MED PHYSICS BIOMED ENG	11	13	4	6	3	1	-	3	4	-	2	13	1	1	1	3	1	2	-	-	-	1	70
91	SOLID EARTH PHYS	-	2	1	-	1	1	1	2	-	1	-	-	-	-	-	1	-	-	-	-	2	-	12
92	HYDROSPHER LOW ATMOS PHYS	8	-	-	4	3	2	2	3	9	-	-	-	-	-	-	7	2	-	-	1	7	-	48
93	GEOPHYS OBSERVAT INSTRUM TECHNIQ	-	2	-	-	-	-	-	-	3	2	-	-	-	-	-	-	-	-	-	-	-	-	7
94	AERONOM SPACE PHYS COSMIC RAYS	1	-	2	1	4	-	1	-	4	-	4	-	-	2	-	5	-	-	-	-	15	-	39
95	FUNDAMENT ASTRON ASTROPHY	-	-	6	-	6	-	1	-	-	-	-	1	-	1	-	-	-	-	-	-	2	-	17
96	SOLAR SYSTEM	2	-	1	-	5	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	5	-	16
97	STARS	-	2	15	-	-	-	-	-	-	-	-	-	-	2	-	1	-	-	-	-	1	4	25
98	STELLAR SYST: GALACT EXTRAGALACT	4	-	12	-	9	1	12	2	-	1	-	3	-	3	-	1	6	-	-	-	1	1	56
	Total	289	246	176	164	156	153	125	124	123	104	97	92	85	76	74	69	69	68	65	59	59	54	2527

Table 14 contd.

A - Indian Inst Sci, Bangalore
B - Bhabha Atom Energy, Bombay
C - Tata Inst Fund Res, Bombay
D - Indian Inst Technol, Delhi
E - Banaras Hindu Univ, Varanasi
F - Indian Inst Technol, Madras
G - Jadavpur Univ, Calcutta
H - Indian Inst Technol, Kharagpur
I - National Phys Lab, Delhi
J - Indian Inst Technol, Kanpur
K - Indian Assoc Cult Sci, Culcatta
L - Saha Inst of Nuclear Phys, Calcutta
M - Indian Inst of Technol, Bombay
N - Delhi Univ, Delhi
O - Indira Gandhi Cent Atom Res, Kalpakkam
P - Calcutta Univ, Calcutta
Q - Poona Univ, Pune
R - Hyderabad Univ, Hyderabad
S - Inst of Phys, Bhubaneswar
T - Sri Venkateswara Univ, Tirupati
U - Physical Res Lab, Ahmedabad
V - Osmania Univ, Hyderabad

Table 15: India's contribution to the world literature of physics categorised by leading institutions and impact factors of journals used [*INSPEC* (Physics Abstracts) 1992]

Impact factor range → Institutions	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
Indian Inst Sci, Bangalore	83	51	57	34	16	15	26	3	-	-	1	-	3	-	289
Bhabha Atom Res Cent, Bombay	85	55	32	33	25	7	7	1	-	-	-	-	1	-	246
Tata Inst Fund Res, Bombay	58	7	40	15	20	9	17	1	-	-	2	-	7	-	176
Indian Inst Technol, Delhi	101	26	20	9	6	-	1	1	-	-	-	-	-	-	164
Banaras Hindu Univ, Varanasi	68	36	24	8	9	3	7	-	-	-	-	1	-	-	156
Indian Inst Technol, Madras	77	39	21	8	6	1	1	-	-	-	-	-	-	-	153
Jadavpur Univ, Calcutta	63	17	18	7	9	6	5	-	-	-	-	-	-	-	125
Indian Inst Technol, Kharagpur	46	44	17	8	2	2	5	-	-	-	-	-	-	-	124
National Phys Lab, Delhi	56	12	28	12	3	1	4	7	-	-	-	-	-	-	123
Indian Inst Technol, Kanpur	33	22	12	13	7	8	6	2	-	-	1	-	-	-	104
Indian Assoc Cult Sci, Culcatta	24	15	13	7	13	13	8	4	-	-	-	-	-	-	97
Saha Inst of Nuclear Phys, Calcutta	36	9	17	11	5	4	9	-	-	-	-	-	1	-	92
Indian Inst of Technol, Bombay	34	17	12	9	1	3	7	1	-	-	-	1	-	-	85
Delhi Univ, Delhi	31	10	15	4	6	5	2	3	-	-	-	-	-	-	76
Indira Gandhi Cent Atom Res, Kalpakkam	38	17	5	8	2	2	2	-	-	-	-	-	-	-	74
Calcutta Univ, Calcutta	29	14	13	3	2	4	3	1	-	-	-	-	-	-	69
Poona Univ, Pune	13	9	12	16	7	6	2	3	-	-	-	-	-	1	69
Hyderabad Univ, Hyderabad	13	5	19	11	12	4	3	-	-	-	-	-	1	-	68
Inst of Phys, Bhubaneswar	14	6	25	4	8	3	4	-	-	-	1	-	-	-	65
Sri Venkateswara Univ, Tirupati	18	23	18	-	-	-	-	-	-	-	-	-	-	-	59
Physical Res Lab, Ahmedabad	19	12	8	5	2	10	3	-	-	-	-	-	-	-	59
Osmania Univ, Hyderabad	41	7	4	1	1	-	-	-	-	-	-	-	-	-	54
Total	980	453	430	228	162	106	122	27	-	-	5	2	13	1	2527

A – >= 0.0 - < 0.5
B – >= 0.5 - < 1.0
C – >= 1.0 - < 1.5
D – >= 1.5 - < 2.0
E – >= 2.0 - < 2.5
F – >= 2.5 - < 3.0
G – >= 3.0 - < 3.5
H – >= 3.5 - < 4.0
I – >= 4.0 - < 4.5
J – >= 4.5 - < 5.0
K – >= 5.0 - < 6.0
L – >= 6.0 - < 7.0
M – >= 7.0 - < 8.0
N – >= 8.0

Table 16: **India's contribution to the journal literature of physics categorised by subfields and impact factors of journals [*INSPEC* (Physics Abstracts) 1992]**

Subfields (Impact factor range →)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
01 COMMUN EDUC	5	4	-	-	-	-	-	-	-	-	-	-	-	-	9
02 MATH METH PHYS	1	-	-	1	2	-	-	-	-	-	-	-	-	-	4
03 CLASS QUANT PHYS	28	9	15	2	19	5	-	-	-	-	-	-	1	-	79
04 RELAT GRAVITAT	12	5	12	-	-	6	-	-	-	-	-	-	-	-	35
05 STATIST PHYS THERMODYN	25	2	14	1	29	3	3	-	-	-	-	-	3	-	80
06 MEASUR SCIENCE	8	1	2	-	-	-	-	-	-	-	-	-	-	-	11
07 SPEC INSTRUM TECHNIQ	24	15	8	-	-	-	-	1	-	-	-	-	-	-	48
11 GEN THEOR FIELD PART	23	4	26	-	3	11	12	-	-	-	4	-	1	-	84
12 SPEC THEOR INTERACT MODEL	17	-	19	-	-	14	4	-	-	-	-	-	2	-	56
13 SPEC REACT PHENOM	21	-	16	2	1	24	4	-	-	-	-	-	-	-	68
21 NUCL STRUCT	17	-	5	20	1	1	4	-	-	-	-	-	-	-	48
23 RADIOACT AND ELECTROMAG	7	4	4	2	-	-	1	-	-	-	-	-	-	-	18
24 NUCL REACT SCATT GEN	1	-	-	2	-	-	-	-	-	-	-	-	-	-	3
25 NUCL REACT SCATT: SPEC REACT	21	-	17	27	-	1	3	-	-	-	-	-	-	-	69
28 NUCL ENGG NUCL POWER STUDIES	37	6	1	1	-	-	-	-	-	-	-	-	-	-	45
29 EXP METHOD INSTRUM	34	12	4	-	-	-	-	-	-	-	1	-	-	-	51
31 THEOR ATOM MOLECULE	25	2	9	-	12	9	2	1	-	-	-	-	-	-	60
32 ATOM SPECT INTERACT PHOTONS	5	3	4	-	18	-	-	-	-	-	-	1	-	-	31
33 MOL SPECT INTERACT PHOTONS	47	13	12	5	7	9	9	-	-	-	-	-	-	-	102
34 ATOM MOL COLLIS PROCES	12	5	3	2	22	3	3	-	-	-	-	-	-	-	50
35 PROP ATOM MOL	6	1	1	-	-	1	-	-	-	-	-	-	-	-	9
36 STUD SPECIAL ATOM MOL	3	1	1	2	3	3	1	-	-	-	-	-	-	-	14
41 ELECTRIC MAGNET	10	-	-	-	-	-	-	-	-	-	-	-	-	-	10
42 OPTICS	63	31	44	10	15	1	1	2	-	-	-	-	1	-	168
43 ACOUSTICS	14	5	3	1	-	-	-	-	-	-	-	-	-	-	23
44 HEAT FLOW THERMAL	3	10	-	-	-	-	-	-	-	-	-	-	-	-	13
46 MECH ELAST RHEOL	100	66	7	-	-	-	-	-	-	-	-	-	-	-	173
47 FLUID DYNAM	172	32	2	1	-	1	1	-	-	-	-	-	-	-	209
51 KINET TRANS THEOR FLUID	4	-	-	2	1	-	-	-	-	-	-	-	-	-	7
52 PHYSICS PLASMA ELECT DISCHARGE	48	7	8	12	4	5	1	-	-	-	-	-	3	-	88
61 STRUCT LIQUID SOLID: CRYSTALL	63	71	36	22	8	4	10	4	-	-	-	-	1	-	219
62 MECH ACOUST PROP COND MATTER	57	10	5	2	-	-	3	-	-	-	-	-	-	-	77
63 LATTICE DYNAM CRYST STAT	28	18	2	1	1	1	5	-	-	-	-	-	-	-	56
64 EQUAT STATE PHASE EQUIL	18	23	17	7	7	1	6	-	-	-	-	1	-	-	80
65 THERM PROP COND MATTER	8	9	1	4	-	-	-	-	-	-	-	-	-	-	22
66 TRANS PROP COND MATTER (NONELEC)	21	14	13	5	-	1	2	-	-	-	-	-	-	-	56
67 QUANT FLUID SOLID LIQUID	-	1	2	1	-	-	-	-	-	-	-	-	-	-	4
68 SURF INTERFACE: THIN FILMS	23	14	23	5	7	3	4	1	-	-	-	-	-	-	80
71 ELECTRONIC STAT	19	11	14	10	2	-	14	-	-	-	-	-	-	-	70
72 ELECTRONIC TRANS COND MATTER	56	28	27	18	5	-	13	3	-	-	-	-	1	-	151
73 ELECTRONIC STRUC ELECT PROP SURF	25	12	20	11	1	-	7	4	-	-	-	-	-	-	80
74 SUPERCONDUCTIVITY	96	6	42	9	26	1	18	1	-	-	-	-	1	-	200
75 MAGNET PROP MATER	13	13	43	11	3	1	15	-	-	-	-	-	1	-	100
76 MAGNET RESONAN RELAX COND MATTER	23	10	17	10	-	1	9	1	-	-	-	-	-	-	71
77 DIELECT PROP MATER	43	30	5	7	1	-	3	1	-	-	-	-	-	-	90

Table 16 contd.

Subfields	Impact factor range →	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
78	OPTICAL PROP COND MATTER	47	54	46	16	7	1	7	3	-	-	-	-	-	-	181
79	ELECTRON ION EMISSION	6	9	1	5	1	1	3	1	-	-	-	-	1	-	28
81	MATER SCI	196	186	73	46	12	3	-	3	-	-	-	-	-	-	519
82	PHYS CHEM	14	10	5	12	5	2	5	2	-	-	-	-	-	-	55
86	ENER RES ENV SCI	122	37	2	2	-	-	1	-	-	-	-	-	-	-	164
87	BIOPHY MED PHYSICS BIOMED ENG	95	20	10	3	1	-	1	-	-	-	-	-	-	-	130
91	SOLID EARTH PHYS	70	7	13	3	1	1	-	-	-	-	-	-	-	-	95
92	HYDROSPHER LOW ATMOS PHYS	106	16	14	3	2	1	-	-	-	-	-	-	-	-	142
93	GEOPHYS OBSERVAT INSTRUM TECHNIQ	21	5	1	-	-	-	-	-	-	-	-	-	-	-	27
94	AERONOM SPACE PHYS COSMIC RAYS	57	23	9	5	6	1	-	-	-	-	-	-	-	-	101
95	FUNDAMENT ASTRON ASTROPHY	48	3	1	-	1	1	-	-	-	-	-	-	-	-	54
96	SOLAR SYSTEM	19	8	10	2	1	1	-	-	-	-	-	-	-	-	41
97	STARS	30	1	4	11	1	8	1	-	-	-	-	-	2	-	58
98	STELLAR SYST: GALACT EXTRAGALACT	62	4	8	11	1	14	1	-	-	-	-	-	1	1	103
	Total	2179	891	701	335	237	144	177	28	-	-	5	2	19	1	4719

A – >= 0.0 - < 0.5
B – >= 0.5 - < 1.0
C – >= 1.0 - < 1.5
D – >= 1.5 - < 2.0
E – >= 2.0 - < 2.5
F – >= 2.5 - < 3.0
G – >= 3.0 - < 3.5
H – >= 3.5 - < 4.0
I – >= 4.0 - < 4.5
J – >= 4.5 - < 5.0
K – >= 5.0 - < 6.0
L – >= 6.0 - < 7.0
M – >= 7.0 - < 8.0
N – >= 8.0

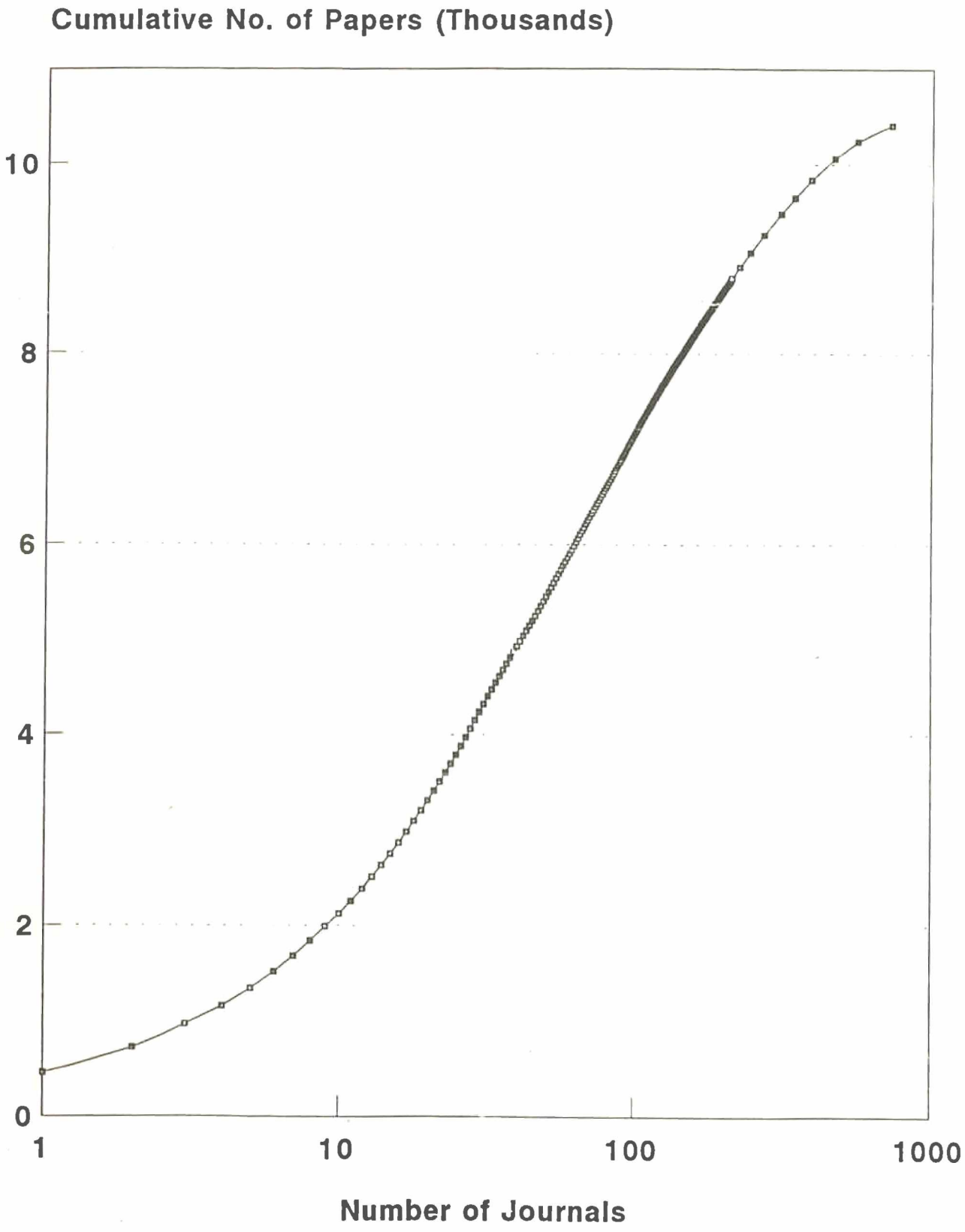

Fig 1. Number of Journals Vs Cumulative Number of Articles.