



A selective review of bibliometric studies on Indian physics and astronomy research output

Amit Kumar Das^a, Gopinath Das^b and Bidyarthi Dutta^c

^aCentral Library, Bhatler College, Dantan, Paschim Medinipur - 721 426, West Bengal;

Email: amittkumardas19@yahoo.in

^bCentral Library, Santal Bidroha Sardha Satabarshiki Mahavidyalaya, Goaltore, Paschim Medinipur-721 128, West Bengal;

Email: gopinathdas003@gmail.com

^cDepartment of Library and Information Science, Vidyasagar University, Midnapore 721 102, West Bengal;

Email: bidyarthi.bhaswati@gmail.com

Received: 30 September 2020; revised: 05 April 2021; accepted: 23 April 2021

This paper presents a review of 159 bibliometric studies on Indian physics and astronomy research output. The distribution of the 159 papers from 1964 to 2020, contributing authors and specific subject domains are analysed. It is found that current research topics of physics and astronomy are hardly selected for the bibliometric study. A few papers incorporate currently relevant aspects of bibliometric analysis to carry out the studies. Both facets, i.e., bibliometrics and physics & astronomy as tool and subject respectively, need to be focussed upon as per the requirement and relevance of time.

Keywords: Bibliometrics; Scientometrics; Physics; Astronomy; Scientometrics of physics; Scientometrics of astronomy

Introduction

Of major science disciplines, physics is the field where Indian contributions during both pre-and post-independence era have been outstanding. It is borne out by the fact that one physicist from pre-independent India received the Nobel Prize, and scientists like J.C. Bose, M.N. Saha, S.N. Bose and K.S. Krishnan missed it narrowly. Several physicists were elected as FRS from colonial India, to mention a few, J.C Bose (FRS- 1920), C.V Raman (FRS- 1924), M.N. Saha (FRS- 1927), K.S. Krishnan (FRS- 1940) and others.

The inception of the first Indian research institute dates to the year 1876, which marks the foundation of the Indian Association for the Cultivation of Science in Kolkata. Physics and astronomy research during the post-independence era distinguished India in global academic and research map with prestigious recognitions. The research output in terms of scholarly publications and patents has been growing, as is evident from bibliographic and citation databases like Indian Science Abstracts, Web of Science, Scopus etc.

The quantitative analysis of the research output is a bibliographic control mechanism that manages documentary chaos owing to the explosion of research

information. This quantitative study in relation to bibliography is known as bibliometrics, the term coined by Pritchard¹. In India, the term librmetry, coined by Ranganathan² precedes bibliometrics. The scope of librmetry includes the application of statistical tools and techniques in the evaluation of library systems and services. There are other synonymous terms like scientometrics, informetrics etc., having the concept of bibliometrics. The bibliometric, scientometric or informetric studies of various subjects in the context of Indian research output showed an upward trend since the 1970s. This can be seen from the growth in the number of Indian bibliometric publications.

This paper presents a review of bibliometric and scientometric studies on Indian physics and astronomy research output. The first article devoted to bibliometrics on Indian physics and astronomy research appeared in 1964³. Although this paper was not a bibliometric study in a strict sense, it was a quantitative analysis of the coverage of Indian physics literature by *Physics Abstracts*. It showed the path towards quantitative analysis of Indian physics and astronomy research, which was shaped in domain-specific bibliometric and scientometric studies later.



Ashadikar
Principal

S.B.S.S. Mahavidyalaya, Goaltore,
Paschim Medinipur, Pin-721128