

## S. Chandrasekhar equals with Newton, Laplace, Gauss and Einstein – C. V. Raman’s opinion and the Physics Nobel Prize nomination

Rajinder Singh

*This short note shows what C. V. Raman thought of S. Chandrasekhar’s (Raman’s nephew) status and scientific achievements when Raman nominated him for the Physics Nobel Prize.*

C. V. Raman received the Physics Nobel Prize in 1930. With that he got the permanent right to propose candidate/s for the Chemistry or Physics Nobel Prize. The following table shows that until 1964 he proposed only five persons<sup>1</sup>. G. N. Ramachandran was nominated for the Chemistry Nobel Prize.

Year	Nominees	Country
1934	O. Stern	USA
1938	E. Fermi	Italy
	E. O. Lawrence	USA
1939	E. O. Lawrence	USA
1957	S. Chandrasekhar	USA
1964	G. N. Ramachandran	India

The details of the Indian nominators and nominees in the field of Chemistry and Physics are published *Chemistry and Physics Nobel Prizes – India’s Contributions*, Shaker Publishers, Aachen, 2016. In the following Raman’s letter is reproduced in detail, which throws new light on nephew–uncle relation.

It is a well-known fact that astrophysics/astronomy had been neglected by the Physics Nobel Committee. In the 1920s, the attitude of the committee toward astrophysics has been quoted by R. M. Friedman as follows: ‘... the new Uppsala group and Arrhenius attempted to eliminate astrophysicists from the scope of the prize in physics. ... Arrhenius proposed that astrophysics no longer should be considered part of physics. ... Thus, he concluded, astrophysics is astronomy, and therefore not part of physics’<sup>2</sup>. In the middle of the twentieth century, some of the physicists had accepted this way of thinking. For instance, Patrick Blackett wrote to S. K. Mitra that Saha’s work belongs to the field of Astronomy, for which there is no Nobel Prize<sup>3</sup>.

Raman protested against this way of thinking. While nominating the astrophysicist S. Chandrasekhar he argued: ‘A great deal of what we call physics today is knowledge derived directly or indirectly from factual and theoretical studies in the field of astronomy. For example, the Newtonian laws of motion, the theories of gravitation of Newton and of Einstein, ... origin of cosmic radiation, etc. ... It is therefore both just and correct to recognize that fundamental contributions to our knowledge of the nature of the physical world which have arisen from factual and theoretical studies in the field of astronomy are fit subjects for the award of the Nobel Prize in Physics’<sup>4</sup>.

About the status of Chandrasekhar, Raman stated: ‘It would not be an overstatement to remark that Chandrasekhar would find a place in the shortest list of great thinkers and mathematicians who have opened up new vistas on the physical universe, a list which would include the names of Newton, Laplace, Gauss and Einstein’<sup>4</sup>.

About Chandrasekhar’s scientific achievements Raman wrote: ‘I am aware that the Nobel Award is usually made for some specific contribution and I would therefore single out his great work on “Relative Transfer” which appears as the fourth and latest in the list (list sent by Raman contains three books and one article. The fourth item in the list is – *Radiative Transfer*, Oxford University Press, 1950) and which contains his elucidation of the nature of planetary and stellar atmospheres from a highly original point of view. This work alone would in my opinion justify the award to Chandrasekhar of the Nobel Prize for Physics’<sup>4</sup>.

According to the available data until 1964, Chandrasekhar was nominated for

the first time by C. V. Raman. In 1962, A. Dutta (University of Calcutta) nominated three candidates: S. N. Bose ‘for his work on Bose Statistics’; S. Tomonaga (Tokyo University) for his work on Quantum Field Theory and S. Chandrasekhar (USA) ‘for his work on Astro Physics’<sup>5</sup>.

In 1983 the Physics Nobel Prize was divided between S. Chandrasekhar and William Alfred Fowler.

How many times and from whom S. Chandrasekhar was nominated between 1965 and 1982, presently cannot be explored, because the Nobel Foundation allows to see for research purpose, only those documents, which are more than fifty years old.

1. Singh, R., *India’s Nobel Prize Nominators and Nominees – The Praxis of Nomination and Geographical Distribution*, Shaker Verlag, Aachen, 2016, p. 21.
2. Friedman, R. M., *Nature*, 1981, **292**, 793–798.
3. Blackett, P. M. S. to Mitra, S. K., letter dated 14 December 1954 (courtesy Jawaharlal Nehru Library and Museum Archive, Delhi).
4. Raman, C. V. to the Nobel Committee, letter dated 18 January 1957 (courtesy Archive – Royal Swedish Academy of Sciences, Stockholm).
5. Dutta, A. to the Nobel Committee, 25 January 1962 (courtesy Archive – Royal Swedish Academy of Sciences, Stockholm).

*Rajinder Singh is with Research Group – Physics Education and History of Science, Physics Institute, University of Oldenburg, Germany.  
e-mail: rajinder.singh@uni-oldenburg.de*