



The founder of the Quantum Mechanics Max Planck as Nobel Prize nominator – praxis of his nomination

Rajinder Singh¹ and Björn Martens²

Research Group - Physics Didactic and Science Communication, Institute of Physics, University of Oldenburg, Germany

Abstract: The German physicist Max Planck (1858-1947) was awarded the Physics Nobel Prize for the year 1918. From 1901 to 1937, he nominated various scientists for the Physics Nobel Prize. His nomination letter were acquired by us from the archive of the Royal Swedish Academy of Sciences, Stockholm. Result of their analysis is given in this short communication.

Keywords: Max Planck; Quantum Mechanics; Nobel Prize

1 Introduction

In literature we find M. Planck's life and science [1,2,3] and nomination for the Nobel Prize [4]. In our previous article, we discussed: (i) Scientific work for which Planck was nominated for the Nobel Prize, and (ii) Opinions of his nominators. (iii) Short biography [5].

However, in the published literature, Planck's role as a nominator has not been discussed. The present article intends to fill the gap.

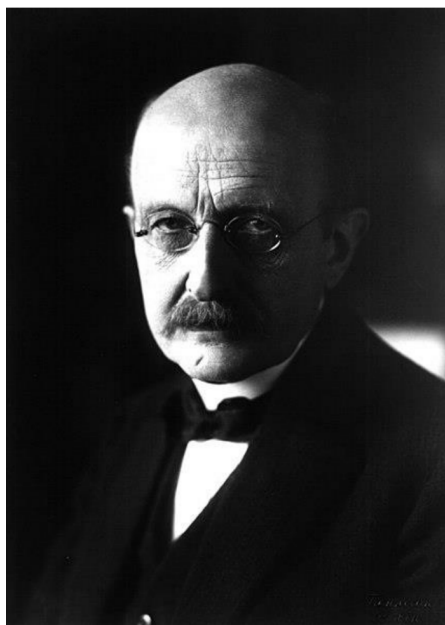


Fig. 1: Max Planck [Credit: Wiki (Public domain)]

¹ Email: rajinder.singh@uni-oldenburg.de

² Email: Bjoern.Martens@uni-oldenburg.de

2 Planck as Nominator

Year	Nominee/s	Nation	Candidate nominated for	NP awarded in
1901	W.C. Roentgen	GER	Radiation named after him [6]	1901
1902	H.A. Lorentz [7]	NDL	None [8]	1902
1902/1903/1904	J.W. Strutt (Lord Rayleigh)	GBR	Discovery of Argon gas [9]	1904
1905/1906	L. Boltzmann	AUT	Research in the field of kinetic theory of gases, and his book “Lectures on Gas Theory” [10]	-
1907/1908	E. Rutherford	CAN	Radioactivity [11]	1908 (CNP)
1911	W. Nernst	GER	Number of experimental and theoretical works, in particular his land mark investigation on the electromotive effectiveness of ions [12]	1920 (CNP)
1916	J. Stark	GER	Discovery of the Doppler-Effect in Canal Radiation [13]	1919
1919/1920/1921	A. Einstein	GER	General Theory of relativity [14]	1921
1922	N. Bohr	DNK	Spectroscopy and atomic model [15]	1922
1923/1924/1925/ 1926/1928/1929/ 1932/1933	F. Paschen & A. Sommerfeld	GER	Fine-structure of spectral lines (experiment & theory) [16]	- & -
1927	A.H. Compton [17]	USA	For the effect named after him [18]	1927
1930	W. Heisenberg	GER	Development of Quantum Mechanics [19]	1932
	E. Schroedinger	AUT	Development of Quantum Mechanics [20]	1933
1931	O. Stern	GER	Investigations on the atomic- and molecular radiation [21]	1943
1934	O. Stern	GER/ USA	Atomic/Molecular radiation; Proof of Maxwell’s law of velocity distribution [22]	
1935	W. Pauli	CHE	Discovery named after him (“Pauli exclusion principle”) [23]	1945
1936	C.D. Anderson [24]	USA	Discovery of positrons [25]	1936
1937	E. Fermi	ITA	His investigations in the field of atomic physics; particularly artificial radioactivity [26]	1938
1947	L. Meitner	SEW	No statement by Planck [27]	-

Table 1: Data collected from Planck’s correspondence, and literature. Scientists nominated for the Physics Nobel Prize by M. Planck. Abbreviations: AUT – Austria, CAN – Canada, CHE – Switzerland, GER – Germany, DK – Denmark, ITA – Italy, SEW–Sweden, GBR – United Kingdom, USA – United States of America. CNP – Chemistry Nobel Prize.

From the foregoing we see that in the first decade of the twentieth century, Planck was very successful nominator. He nominated five persons. Out of them four received the Nobel Prize in the year of nomination. Also, we see that all of his nominees were from different countries.

In the second decade, he nominated three German scientists. W. Nernst, who was nominated in 1911 by Planck, received Chemistry Nobel Prize in 1920. J. Stark received the

Physics Nobel Prize in 1919. A. Einstein, who was nominated thrice by Planck for the general theory of relativity received Physics Nobel Prize in 1921 “for his services to Theoretical Physics, and especially for his discovery of the law of the photoelectric effect” [28].

Between 1923 and 1933, F. Paschen and A. Sommerfeld were nominated eight times by Planck, but without success.

It is well-known that after Nazi Regime came in power, most of scientists of Jews origin were forced to leave Germany. O. Stern was such a case. He was nominated twice by Planck. Stern received the Physics Nobel Prize in 1943 as American citizen. For Indian readers it might be of interest that C.V. Raman on Oct. 25, 1933 wrote a letter to the NC and stressed not only the scientific work, but also the political situation. For instance,

“I understand, however, that professor Stern has been displaced from his chair by the present Government in Germany. The award of the Nobel Prize to him will have at least this great merit that it would relieve him from distress and enable him to continue his most important investigations” [29].

During the critical political times Planck nominated only foreign scientists or scientists of German origin who had left Germany. His last nomination was in favour of L. Meitner and she was the only woman nominated by him. Then 89 years old Planck, who had suffered much on private level, due to death of his son, who was killed by Nazi regime, practically was too old to write a proper letter of nomination. He wrote just one line saying the Physics Nobel Prize for the year 1947 be awarded to L. Meitner.

From Table 1 we also conclude that Planck nominated 19 scientists. Out of them 15 sooner or later received the Nobel Prize. From the 15 winner, 10 were ‘non-German’ by nationality. If we include O. Stern, who received NP as American citizen, this number rises to 11. His five nominated German scientists won the Prize.

3 Conclusions

Max Planck who gave the hypothesis of the energy quanta was an integrated part of the international scientific community. During his scientific career, the Nobel Committee almost regularly asked him to send proposals for the Nobel Prizes. He nominated scientists from the USA, Canada, and other European countries like Italy, Switzerland, Austria and Denmark. Out of 19 nominated candidates, 10 were either German or of German origin. Only four persons nominated by him did not get the Prize, while the rest fifteen were honoured. This suggests that he was in a position to judge the quality of work of his contemporaries.

The only female scientist nominated by M. Planck was L. Meitner.

Out of 19 nominated candidates E. Rutherford (NP winner 1908) and W. Nernst (NP winner 1920) were awarded Chemistry Nobel Prize by the Swedish Academy of Sciences.

In majority of the cases, Planck nominated those candidates, whose work supported the quantum theory, that is, Planck’s idea. His nomination praxis shows – how a scientist directly or indirectly ‘forces’ his ideas on the scientific community.

Our case study shows that minor corrections are asked for in the standard literature on Nobel Prizes. For instance, in E. Crawford *et al.*, A. Einstein’s nomination by Planck in the years 1920 is missing [30]. Similarly, F. Paschen and A. Sommerfeld nomination by Planck, of Jan. 29, 1924, which reached the Nobel Committee on Feb. 4, 1924, escaped the attention of authors [31].

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References

1. The information is taken from, Maurmair, Silke/Harders, Levke (2014): Max Planck 1958-1947, in: DeutschesHistorisches Museum LeMO, <https://www.dhm.de/lemo/biografie/max-planck> (17.01.2021). Nobel Lecture (1967): Max Planck. Biographical, in: The Nobel Prize in Physics, <https://www.nobelprize.org/prizes/physics/1918/planck/biographical/> (17.01.2021).
2. J.L. Heilbron, *The Dilemmas of an upright man – Max Planck and the fortunes of German science*, Harvard University Press, Cambridge 2000. H. Roos, A. Hermann, (Ed.), *Max Planck – Vorträge, Reden, Erinnerungen*, Springer Verlag, Berlin (2001).
3. H. Kangro, *Early History of Planck's Radiation Law*, Taylor and Francis, London (1976).
4. E. Crawford, *Isis* **75** (1984) 503-522. R.M. Friedmann, *Historical Studies in the Natural Sciences***20**, 1989, 63-77. E. Crawford, J.L. Heilbron, R. Ullrich, *The Nobel population* (1901-1937), The Regents of the University of California, California 1987. G. Kueppers, P. Weingart, N. Ulitzk, *Die Nobelpreise in Physik und Chemie* (1901-1929), *Materialien zum Nominierungsprozess*, B.K. Verlag GmbH, Bielefeld (1982). R.M. Friedman, *The politics of excellence: Behind the Nobel Prize in science*, A W.H. Freeman Book, New York 2001. E. Crawford, *Historical studies in the Nobel archives – the prizes in science and medicine*, Universal Academy Press, Inc., Tokyo (2002). E. Crawford, *The beginning of the Nobel Institution – The science prizes* (1901-1915), Cambridge University Press, Cambridge (1981).
5. R. Singh, B. Martens, *Sci. Cult.* **87** (2021) 171-179.
6. M. Planck to Nobel Committee (abb. NC), Jan. 14, 1901.
7. In 1902, Nobel Prize was shared by H.A. Lorentz and P. Zeeman.
8. M. Planck to NC, telegram, Jan. 31, 1902.
9. M. Planck to NC, Jan. 19, 1902. M. Planck to NC, Jan. 12, 1903. M. Planck to NC, Jan. 125, 1904.
10. M. Planck to NC, Jan. 26, 1905. M. Planck to NC, Jan. 28, 1906.
11. M. Planck to NC, Jan. 26, 1907. M. Planck to NC, Jan. 20, 1908.
12. M. Planck to NC, Jan. 22, 1911.
13. M. Planck to NC, Jan. 8, 1916.
14. M. Planck to NC, Jan. 27, 1919. M. Planck to NC, Jan. 25, 1920. M. Planck to NC, Jan. 22, 1922.
15. M. Planck to NC, Jan. 22, 1922.
16. M. Planck to NC, Jan. 14, 1923. M. Planck to NC, Jan. 29, 1924. M. Planck to NC, Jan. 20, 1925. M. Planck to NC, Jan. 26, 1926. M. Planck to NC, Jan. 22, 1928. M. Planck to NC, Jan. 24, 1929. M. Planck to NC, Jan. 24, 1932. M. Planck to NC, Jan. 14, 1933.
17. In 1927, A.H. Compton shared the NP with C.T.R. Wilson.
18. M. Planck to NC, Jan. 1, 1927.
19. M. Planck to NC, Jan. 1, 1929.
20. M. Planck to NC, Jan. 1, 1929.
21. M. Planck to NC, Jan. 2, 1931.

22. M. Planck to NC, Jan. 15, 1934.
23. M. Planck to NC, Jan. 1, 1935.
24. In 1936, C.D. Anderson shared the NP with V. Hess.
25. M. Planck to NC, Jan. 22, 1936.
26. M. Planck to NC, Jan. 17, 1937.
27. M. Planck to NC, Jan. 14, 1947.
28. <https://www.nobelprize.org/prizes/physics/1921/summary/>, Feb. 9, 2021. For more detail, see A. Elzinga, *Einstein's Nobel Prize – A glimpse behind closed doors – The archival evidence*, Science History Publications/USA, Sagamore Beach (2006).
29. For more detail, see R. Singh, *Chemistry and Physics Nobel Prizes – India's contribution*, Shaker Publisher, Aachen (2016) pp. 61-88.
30. See under Ref. 4, E. Crawford et al. (1987) pp. 81-82.
31. Ibid., E. Crawford et al. (1987) pp. 95-96.