## Pascual Jordan, the Unsung Hero among the Creators of Quantum Mechanics\*

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Among the ten leading contributors to the quantum revolution, the predecessors: Max Planck, Albert Einstein, Niels Bohr and Louis de Broglie; and the main actors: Werner Heisenberg, Max Born, Pascual Jordan, Paul Dirac, Erwin Schrödinger, and Wolfgang Pauli (in order of appearance), Jordan is the only one who was not awarded a Nobel Prize and the only one for whom no full length biography has been written. In preparing my talk, I have used the lively recollections of Engelbert Schücking [2], the proceedings of the Mainz Symposium [3], Karl Von Meyenn's account [4-6] and the general treatises on the history of quantum theory cited below.

Pascual Jordan (1902 – 1980), "at fourteen, had a plan of writing a big book on all the fields of science" [7, p. 45]. In a sense, he remained faithful to his teens' dream: at the University of Göttingen he studies the regular courses in mathematics, physics and zoology; on top of his main input to the foundations of quantum mechanics and quantum field theory he works (and publishes papers and books) on cosmology, biology, psychology, philosophy, religion. May be such an encyclopedic outlook, along with some personal traits and his elitist political preferences, had conspired to deprive him, alone among the creators of quantum theory, of the Nobel Prize. In the words of the French historian of science: "Among the creators of quantum mechanics Pascual Jordan is certainly the least known, although he contributed more than anybody else quantum field theory to be born" [8].

## References

- 1.\*S. S. Schweber, *QED and the men who made it: Dyson, Feynman, Schwinger and Tomonaga*, Princeton University Press, Princeton (1994) Sect. 1.2, p. 5.
- E. L. Schücking, Jordan, Pauli, politics, Brecht, and a variable gravitational constant, *Physics Today* 52(10) 26-31 (1999); full version in: *On Einstein's path*, ed. A. Harvey, Springer (1999) 1-14.
- D. Hoffmann, J. Ehlers, J. Renn (Eds.), Pascual Jordan (1902 1980), Mainzer Symposium zum 100. Geburstag, Max-Planck-Institut f
  ür Wissenschaftgeschichte; http://www.mpiwgberlin.mpg.de/preprints/p329.pdf (2007).
- 4. K. von Meyenn, Ernst Pascual Jordan, Complete Dictionary of Scientific Biography (2008).
- 5. http://www.encyclopedia.com/doc/IG2-2830905174.html
- 6. F. L. Holmes (ed.), *Dictionary of Scientific Biography*, 17, Charles Scribner's Sons, New York (1990) 448-454.
- 7. J. Mehra, H. Rechenberg, *The historical development of quantum theory*, Vol. 3: *The formulation of quantum mechanics and its modifications 1925 1926*, Springer, New York (1982).
- 8. O. Darigol, The origin of quantized matter waves, Hist. Stud. Phys. Sci. 16(2) 189-253 (1986).