

Philosophy of Quantum Theory

John Dougherty

SoSe 2026

Meeting:	Mondays, 10:00–12:00 (s.t.) Ludwigstr. 31, Room 021
Office Hours:	Thursdays, 15:00–17:00 Ludwigstr. 31, Room 131
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Description

The development of quantum theory in the early twentieth century challenged many philosophical theses about the natural world and our knowledge of it. One interesting feature of this theory is its relation to older theories. From its earliest days, the descriptions of the world offered by quantum theory have depended on the descriptions given by other theories: to generate a quantum model of a system, one usually begins with a “classical” model and “quantizes” it. In this course, we will investigate the idea of quantization and its philosophical consequences for the interpretation of quantum theory, inter-theoretic relations like reduction and emergence, and the development of new physical theories.

Assessment

The evaluation for this course will be by means of a term paper submitted at the end of the semester. If you would like to submit a term paper, you must register through LSF during the registration period (22.05.–03.07.2026) and submit it to me by email by the term paper deadline (18.09.2026). Please note that extensions of this deadline are not up to me; if you need an extension, please contact Fabian Widerna (f.widerna@lmu.de) at the Prüfungsamt für Geistes- und Sozialwissenschaften (PAGS).

Your paper should be on a philosophical topic related to quantum mechanics. Near the end of the semester I will distribute a list of suggested questions and grading criteria. You may write your paper on topic not on that list; if you do, then I recommend speaking to me before writing the paper, so that I can advise on the topic and scope of your planned alternative. The term paper should be 3000 words for BA students and 6000 words for MA students. In either case, it should be written in 12pt font, with 1.5 spacing, 3cm margins on the left and right, and a standard academic typeface (e.g., Computer Modern, Times New Roman, Palatino, Calibri, etc.)

Resources

Questions about the administration of philosophy teaching at LMU should be directed to Thomas Wyrwich (thomas.wyrwich@lrz.uni-muenchen.de). The Erasmus coordinator for philosophy at LMU is Peter Adamson (office.peter.adamson@lrz.uni-muenchen.de). The list of women’s representatives (Frauenbeauftragte) for the Philosophy Faculty can be found on the Faculty’s webpage (www.philosophie.uni-muenchen.de/fakultaet/frauenbeauftragte/index.html); the representative for the MCMP is Vanessa Carr. Issues regarding the economic, social, and cultural aspects of student life—including studying with a child or studying with a disability—are the responsibility of the Munich Student Union (<https://www.studentenwerk-muenchen.de>).

Schedule and readings

All texts will be available on LSF.

Introduction

13.04. Introduction

20.04. Bokulich, A. (2010). Three approaches to the quantum–classical relation: Bohr, Heisenberg, and Dirac. *Iyyun: The Jerusalem Philosophical Quarterly*, 59, 3–28

27.04. Bohr, N. (1958). Unity of knowledge. In *Atomic Physics and Human Knowledge* (pp. 67–82). Wiley

04.05. Chevalley, C. (1994). Niels Bohr’s words and the Atlantis of Kantianism. In J. Faye & H. J. Folse (Eds.), *Niels Bohr and Contemporary Philosophy* (pp. 33–56). Springer

18.05. Howard, D. (1994). What makes a classical concept classical? Toward a reconstruction of Niels Bohr’s philosophy of physics. In J. Faye & H. J. Folse (Eds.), *Niels Bohr and Contemporary Philosophy* (pp. 201–230). Springer

22.05. (4–6pm) Kaveh, S. (2024). A reinterpretation of Heisenberg’s *Umdeutung* in prescriptive-dynamical terms. *Studies in History and Philosophy of Science*, 107, 43–53

25.05. HOLIDAY

05.06. (4–6pm) Radder, H. (1991). Heuristics and the generalized correspondence principle. *The British Journal for the Philosophy of Science*, 42(2), 195–226

08.06. Rosaler, J. (2015). “Formal” versus “empirical” approaches to quantum–classical reduction. *Topoi*, 34(2), 325–338

19.06. (4–6pm) Thébault, K. P. Y. (2016). Quantization as a guide to ontic structure. *The British Journal for the Philosophy of Science*, 67(1), 89–114

22.06. Hooker, C. A. (2004). Asymptotics, reduction and emergence. *The British Journal for the Philosophy of Science*, 55(3), 435–479

29.06. Bokulich, A. (2008). Can classical structures explain quantum phenomena? *The British Journal for the Philosophy of Science*, 59(2), 217–235

06.07. Huggett, N., & Callender, C. (2001). Why quantize gravity (or any other field for that matter)? *Philosophy of Science*, 68(S3), S382–S394

13.07. Linnemann, N. (2022). Quantisation as a method of generation: The nature and prospects of theory changes through quantisation. *Studies in History and Philosophy of Science*, 92, 209–223