**COURSE DESCRIPTIONS**

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| Codes of course: BMA-LOTD17-208.09, BMI-LOTD17-208E.09, BMA-LOTD-613.09BMI-LOTD-613E.09, BMA-FILD-401.117, BBN-FIL-401.133,BMA-FILD-391.3, BBN-FIL-315.3 |
| Title of course: **Realist interpretations of quantum theory 2** |
| Lecturer: **Márton Gömöri** |
| **General aim of the course:****The course provides an introduction to the foundations of quantum mechanics, focusing on the prospects of a realistic physical account of quantum phenomena, one in which the notion of observation and observer doesn’t have a fundamental role. This is a continuation of last semester’s Realist interpretations of quantum theory.****Content of the course:*** **Pilot wave theories**
* **Collapse theories**
* **Many worlds**
* **Quantum probability and quantum logic**

**Grading criteria, specific requirements:** Oral exam. Required material will vary depending on students’ level of study and background.Prerequisites: Knowledge of basic physics as well as calculus and linear algebra is presupposed, but no knowledge of quantum theory is required. **Attendance in first semester is presupposed.****Required reading:****Tim Maudlin, Philosophy of Physics: Quantum Theory. Princeton University Press, 2019****Suggested further reading:****Tim Maudlin, *Quantum Non-Locality and Relativity*. Malden, MA: Wiley-Blackwell, 2011.****David Albert, *Quantum Mechanics and Experience,* Cambridge, MA: Harvard University Press, 1992.****Adam Becker, *What Is Real?* New York: Basic Books, 2018.****John Stewart Bell, *Speakable and Unspeakable in Quantum Mechanics*, second edition, Cambridge: Cambridge University Press, 2004.****E. Szabó László, *A nyitott jövő problémája - véletlen, kauzalitás és determinizmus a fizikában (The problem of open future - chance, causality, and determinism in physics)*, Typotex Könyvkiadó, Budapest, 2002.****Jean Bricmont, *Making Sense of Quantum Mechanics,* Cham, Switzerland: Springer International, 2016.****Travis Norsen, *Foundations of Quantum Mechanics: An Exploration of the Physical Meaning of Quantum Theory,* Cham, Switzerland: Springer International, 2017.** |