**COURSE DESCRIPTIONS**

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| Codes of course: BMA-LOTD17-208.09, BMI-LOTD17-208E.09, BMA-LOTD-613.09 BMI-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.** |