**COURSE DESCRIPTIONS**

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| Code of course: **BMI-LOTD-613E.01,** BMA-LOTD-613.01 |
| Title of course: **Realist interpretations of quantum mechanics** |
| 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.**  **Content of the course:**   * **Eight quantum experiments and the phenomenon of quantum non-locality** * **The quantum recipe** * **The wavefunction, the quantum state and the** Pusey-Barrett-Rudolph theorem * **Collapse theories and the problem of local beables** * **Pilot wave theories** * **Many worlds** * **Relativistic quantum field theory**   **Grading criteria, specific requirements:**  Oral exam.  Prerequisites: knowledge of basic physics as well as calculus and linear algebra is presupposed, but no knowledge of quantum theory is required.  **Required reading:**  **Tim Maudlin, Philosophy of Physics: Quantum Theory. Princeton University Press, 2019**  **Suggested further reading:**  **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.**  **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.** |