Division of Theoretical Physics IPPAS

presents

Philosophy of Physics:

Comparing Quantum and Classical Theories

- **Time & Location**: Friday at 10:00, room 15/XV, Institute of Physics PAS (al. Lotników 32/46).
- **Online access:** VoD recordings on YouTube youtube.com/@theoryIFPAN
- **Duration:** 5 sessions, each 2 hours (10 hours in total)
- **First Lecture:** October 30th
- **Lecturer**: Dr Piotr Szańkowski (piotr.szankowski@ifpan.edu.pl)
- **Reading Materials**: Available on the course website.
- **Language**: English
- **Website**: https://theory.ifpan.edu.pl?class=26/1/qvscl/pszan

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DESCRIPTION:

Even among specialists, quantum mechanics is notorious for being difficult—or even impossible—to understand. The standard approach to this problem is to explain the numerous idiosyncrasies of quantum theory by comparing and contrasting it with classical theories. This tried-and-true strategy relies, of course, on our solid understanding of classical theories—contrasting the classical with the quantum can shed light on the latter only if there are no doubts about the former. However, is our confidence in classical physics truly justified?

In this series of lectures, I will present a critical examination of our current understanding of classical physical theories in the context of their comparison with quantum mechanics. I will argue that this understanding is far from complete, and that much remains to be learned. Finally, I will outline a systematic strategy for addressing this issue and show that many classical features can, in fact, be best explained through comparison with quantum mechanics—an ironic turn of events, given the context.