Philosophy 4991G/9237: Physics and Reality
Winter Term 2025

Theoretical physics today pursues a task begun by Galileo, Huygens, and Newton in the 17th century: to understand the physical actions of matter through mathematical laws. The philosophical questions that they raised in this pursuit continue to influence physical inquiry. This course will study some metaphysical issues regarding the character of theoretical physics as a representation of the physical world: the nature of theories and theoretical entities, the application of mathematics to the world, the role of conventions, and, generally, the progress (if any) of science from Newton to the present in method and in grasp of "the nature of things". No special background in physics or math is presupposed, but some central ideas will be introduced in an intuitive way. Texts to be studied include works by Newton, Huygens, Maxwell, Poincaré, Einstein, Weyl, and Bohr, as well as contemporary literature.

Requirements:

Regular participation in seminar discussions. All readings will be posted on OWL.
One seminar presentation (25%) on one of the assigned readings, accompanied by a written outline or slide presentation
One short paper (25%)
One term paper (50%)