

Wednesday, 16 November 2:00-4:00 pm

RESEARCH SEMINAR IN THE PHILOSOPHY OF NATURAL SCIENCES

Roman Frigg/Stephan Hartmann

Matteo Morganti

Does Standard Quantum Mechanics Require a New Ontology?

Abstract

In standard quantum mechanics, many-particle systems of indistinguishable particles appear to violate the Principle of the Identity of the Indiscernibles, which can be understood as a 'test' for the attribution of individuality. As a consequence, quantum particles can only be intended as individuals by postulating a form of 'transcendental' (non-empirical) individuality. Given the allegedly obscure nature of this latter concept, some authors suggest to adopt a completely new, non individual-based, ontology for quantum mechanics. This paper resists this conclusion: individuality is ultimately 'transcendental', i.e., not purely qualitative in nature. Therefore, with only one important specification, quantum particles can be taken to be as much individuals as classical particles and everyday objects.