M A T H E M A T I C A L P H Y S I C S S E M I N A R

Rutgers University
Hill Center - Room 705

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The One-World Interpretation of Quantum Mechanics

Abstract

In this talk, I will sketch a somewhat novel approach to the foundation of quantum mechanics. Our approach is based on a few basic physical principles; in particular on a principle of "duality between observables and indeterminates" and one of "information loss and entanglement". In order to formulate these principles with some precision, it is useful to clarify what is meant by notions such as "events", "empirical properties", etc. Using techniques from the theory of operator algebras, a mathematical formulation of those principles is proposed and consequences for the theory of von Neumann measurements and non-demolition measurements are outlined.