

INSTITUTUL DE MATEMATICA "SIMION STOILOW" AL ACADEMIEI ROMANE

Conferinta lunara

Proving Quantum Indeterminism

Cristian S. Calude

(University of Auckland, New Zealand)

Miercuri 16 septembrie 2015, ora 13:00

IMAR, amfiteatrul "Miron Nicolescu", parter

Abstract: We prove that quantum indeterminism — formally modelled as value indefiniteness — is incompatible with the supposition of predictability: measurements of value indefinite observables are unpredictable. The proof makes essential use of a strengthened form of the Kochen-Specker theorem and relies on three assumptions: compatibility with quantum mechanical predictions, non-contextuality, and the value definiteness of observables corresponding to the preparation basis of a quantum state. Finally, we show how unpredictability "certifies" the quality of a specific quantum random generator.