Contribution ID: **1154** Type: **Poster (Non-Student) / affiche (non-étudiant)**

Incompatibility of Determinism, Independence, and Objectivity

Tuesday 14 June 2016 19:10 (2 minutes)

Quantum mechanics is often described as "weird" and "strange" because it abandons many of the intuitive traits of classical physics. Specifically, the notion that the world is objective, is deterministic, and exists independent of measurement are basic features of classical theory, but do not always hold up in quantum theory. I point out that these intuitive ideas are actually not genuine features of classical physics. Instead, these three apparently reasonable classical assumptions —objectivity, determinism, and independence—are mutually incompatible with any theory, not only with quantum mechanics. While any two of these three assumptions are compatible, all three are not. Hence our seemingly reasonable classical assumptions may not be so reasonable after all.

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Session Classification: DTP Poster Session with beer / Session d'affiches, avec bière DPT

Track Classification: Theoretical Physics / Physique théorique (DTP-DPT)