



Mathematics & Statistics Colloquium

Friday, December 4, 2020, 4:15pm-5:15pm

Zoom Meeting ID: 941 6389 5998

Password (if prompted): 371814



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Playing Games with Quantum Probabilities

Abstract. When two separated parties share entangled quantum states and use the natural randomness of the outcomes of quantum experiments to generate probability densities, then they can get densities that are not possible with classical random variables. When such densities are used to play games, the odds of winning can grow beyond what “common sense” believes to be possible. Prover system games are used to decide if certain problems have solutions. But when we allow these quantum densities, many problems that are not supposed to have solutions suddenly have “quantum” solutions. For example, graphs can have “quantum” colorings that use far fewer colors. In this talk we introduce many of these ideas and some of these games.

Biographical Sketch. Vern Paulsen received his PhD in Mathematics from the University of Michigan in 1977. He was previously a John and Rebecca Moores Professor at the University of Houston. In 2015, he joined the Institute for Quantum Computing at the University of Waterloo, Waterloo, Ontario. In recent years he has given short courses on games in Belfast, Oslo, and Madrid.