



DEPARTAMENTO DE FÍSICA
UNIVERSIDAD DE SANTIAGO DE CHILE

SEMINARIO ONLINE

**Mi 06
OCTUBRE
15.30 Hrs.**

THE THEORY OF QUANTUM INFORMATION: CHANNELS, CAPACITIES, AND ALL THAT

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ABSTRACT

Information theory offers mathematically precise theory of communication and data storage that guided and fueled the information age. Initially, quantum effects were thought to be an annoying source of noise, but we have since learned that they offer new capabilities and vast opportunities. Quantum information theory seeks to identify, quantify, and ultimately harness these capabilities. A basic resource in this context is a noisy quantum communication channel, and a central goal is to figure out its capacities---what can you do with it? I'll highlight the new and fundamentally quantum aspects that arise here, such as the role of entanglement, ways to quantify it, and bizarre new kinds of synergies between resources. These ideas elucidate the nature of communication in a quantum context, as well as revealing new facets of quantum theory itself.



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