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Complementarity in Quantum Error Correction and Quantum Cryptography

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Abstract:

Quantum channels are described mathematically by completely positive maps. Error-correcting codes for quantum channels are the key vehicles used to avoid noise such as decoherence induced by physical attempts to build quantum computers. On the other hand, Private codes of quantum channels play a central role in the development of private quantum communication networks designed to prevent adversarial attacks by eavesdroppers. It turns out that a code is private for a channel precisely when it is correctable for a complementary channel, and there is a straightforward algebraic recipe that allows it to move between the two perspectives. Moreover, an approximate version of the relationship can be quantified in terms of diamond (or completely bounded) norms for channels.

DATE: **November 29, 2007**
TIME: **11:30am – 12:30pm**
PLACE: **Math and Physics Building, Room 318**

Refreshments will be served at 11:00am in Room 318