

SEMINARI

principi  
metodo

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nucleare

teoria



UNIVERSITÀ  
DI TRENTO

Dipartimento di  
Fisica

**Dott. Alonso Viladomat**

Technische Universität München (TUM)

Wednesday, 28 June 2023, 2 p.m.

Room A221, Povo 1

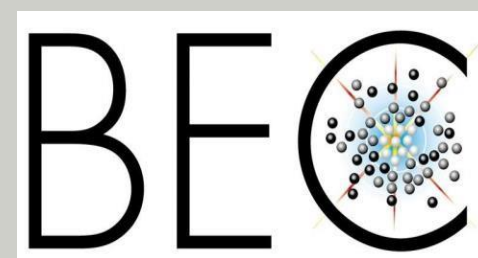
**BEC Seminar: Counterfactual quantum computation,  
communication and cryptography**

### Abstract

Quantum computation and communication are very promising applications of quantum phenomena that could lead to great advances in technology, for instance: the reduction of energy consumption of communication and computing processes. Counterfactual quantum communication proposes a probabilistic method that allows us to know in certain scenarios the outcome of an information processing device without running the device at all.

In this talk we introduce the concept of interaction-free quantum interrogation with the Elitzur-Vaidman bomb tester experiment, then we extend it to the counterfactual quantum computation experiment and discuss its applications in communication and cryptography.

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