



UNIVERSITA' DEGLI STUDI DI PAVIA

DOTTORATO DI RICERCA IN FISICA

LEZIONE VOLTIANA

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Aula 102 "L. Giulotto", ore 15.00

Dipartimento di Fisica, via Bassi 6, Pavia

When Science meets Science Fiction: from Newton to Quantum Teleportation

Nicolas Gisin

University of Geneva, Switzerland

To have an object disappearing from one location, only to reappear somewhere else, without the object ever passing through any intermediate locations, is that possible? Since our childhood we learned that in order to interact with an object we have no choice but to move to it, or to throw something at it.

However, since Newton, Physics has almost always presented us a world-view that includes one form or another of non-locality.

Indeed, Newton's theory of universal gravitation predicts the possibility of instantaneous communication throughout the entire universe. Quantum theory also admits a form of non-locality, though much more subtle, without the possibility of communication, all based on the concept of "true chance".

I'll invite you to discover these singular notions, without mathematics, but also without pretending it's all easy. Quantum non-locality provides a gateway to fascinating phenomena, like quantum teleportation and quantum cryptography.