# SEMINARIO
## Departamentos de Física Teórica I y II
## Universidad Complutense de Madrid

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**TITULO**: **Long-distance continuous-variable quantum key distribution**

**LUGAR**: FACULTAD DE CIENCIAS FÍSICAS UCM
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**AULA**: Seminario Depto. Física Teórica I, Planta 3ª

**ABSTRACT**

Distributing secret keys with information-theoretic security is arguably one of the most important achievements of the field of quantum information processing and communications. The rapid progress in this field has enabled quantum key distribution (QKD) in real-world conditions and commercial devices are now readily available. QKD systems based on continuous variables present the major advantage that they only require standard telecommunication technology, and in particular, that they do not use photon counters. However, these systems were considered up till now unsuitable for long-distance communication. Here, we overcome all previous limitations and demonstrate for the first time continuous-variable quantum key distribution over 80 km of optical fibre. The demonstration includes all aspects of a practical scenario, with real-time generation of secret keys, stable operation in a regular environment, and use of finite-size data blocks for secret information computation and key distillation. Our results correspond to an implementation guaranteeing the strongest level of security for QKD reported to date for such long distances and pave the way to practical applications of secure quantum communications.