

QuARC-CSIC: Optical Ground Stations as Key Infrastructures for Space-Ground Quantum Communications

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This presentation will introduce the Quantum Advanced Research Center (QuARC-CSIC) as a national initiative to coordinate and consolidate quantum technologies in Spain, with a strong emphasis on shared infrastructures and experimental capabilities. Within this framework, particular focus will be placed on the development of optical ground stations (OGS) as key enabling platforms for quantum communications. We will present the role of these OGS infrastructures in bridging terrestrial and space segments, supporting the validation of satellite-to-ground QKD links, including their relevance for missions such as EAGLE-1. The talk will highlight how these platforms enable realistic testing under urban and semi-rural conditions, as well as their role as open, collaborative infrastructures within QuARC, supporting multiple use cases—from fundamental research to system-level validation and future EuroQCI services—positioning CSIC as a central actor in the deployment of scalable and interoperable quantum communication networks