IQ7: **Anaïs Dréau** (Laboratoire Charles Coulomb – Montpellier) 2h

"Fluorescent spin-defects in semiconductors for quantum technologies”

Optically-active spin defects in semiconductors are solid-state artificial atoms that can maintain their quantum properties over very long times, and sometimes up to room-temperature. In this lecture, we will explore the physics of the prominent NV center in diamond. We will learn how to create this fluorescent spin defect, control its quantum properties and protect them from environment decoherence. We will review its appealing properties for quantum applications, such as ultra-sensitive nanoscale quantum sensors, multi-spin clusters for quantum information processing and quantum communication networks. Current challenges towards large-scale implementation of quantum technologies and the exploration of novel platforms to isolate individual spin defects will be addressed.