GEMaC
Groupe d'Étude de la Matière Condensée

QUANTUM SENSING WITH POINT DEFECTS IN SEMICONDUCTORS

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Bâtiment Fermat
Amphi G

Experimental methods allowing for the detection of single spins in the solid-state, which were initially developed for quantum information science, open new avenues for the development of highly sensitive quantum sensors. In that context, the electronic spin of a single nitrogen-vacancy (NV) defect in diamond can be used as an atomic-size magnetometer, providing an unprecedented combination of spatial resolution and magnetic sensitivity under ambient conditions. In this talk, I will first illustrate how

scanning-NV magnetometry can be used as a powerful tool for exploring condensed-matter physics, focusing on chiral spin textures in antiferromagnetic materials. I will then discuss our recent efforts in researching alternative material platforms that could expand the range of quantum sensing functionalities offered by diamond, with a focus on silicon and hexagonal boron nitride.