

Seminar Title:

Doped magnetism in dipolar Rydberg atom arrays

Speaker: **Prof. Antoine Browaeys**

Laboratoire Charles Fabry, Institut d'Optique, CNRS

日時 : 2026年6月19日(金) 10:30-12:00

Date and Time: Friday, June 19, 2026, 10:30-12:00

場所 : 理学研究科5号館5階第4講義室525号室

Place: The 4th Lecture room, Room 525 (5F), Physics Department Building

Abstract:

This talk will present two recent experiments where we explore quantum magnetism in a synthetic system consisting of Rydberg atoms arranged in arrays of various geometries. We explore the dynamics of hole in a spin background, implementing a bosonic version of the t - J model usually introduced to describe the properties of doped magnets. To do so, we use the resonant dipole interaction between Rydberg atoms in tweezer arrays and rely on three Rydberg states in each atom to encode the spin and the hole. Varying the ratio t/J , we observe in a one dimensional chain the binding of holes and the influence of the dipolar tail of the interaction on the propagation of the holes [Qiao et al., Nature 2025]. Working in a triangular ladder geometry and in a regime where $t \gg J$, we observe the binding of a magnon and hole and explore kinetic frustration in this system.

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