

Quantum Magnetism and Ultracold Atoms

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Atomic, Molecular and Optical physics and Quantum Optics offer various platforms to study quantum magnetism. In my lecture I will describe some these platforms and present recent experimental and theoretical progress in studies of these system. In particular, I will talk about:

- Ultracold atoms in optical lattices [1]; here I will focus on the Fermi Hubbard models [2], and various non-standard Hubbard models [3,4], synthetic dimensions and synthetic gauge fields [5].
- Ultracold trapped ion chains; here I will focus on 1D models with controlled interaction range [6], and nonlocality in many body systems [7].
- Ultracold atoms trapped close to nano-structures [8].

References:

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