

Rydberg physics for quantum applications: excitons vs atoms

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The remarkable observation of Rydberg excitons in the copper oxide raised the question whether it can be utilized similar to Rydberg atoms for development of quantum technologies or for observation of novel quantum effects. In this talk, I will review cases in application of Rydberg excitons for nonlinear optics and quantum simulation. In addition, I will discuss the feasibility of using Rydberg excitons in sensing electromagnetic fields as another potential application. It will be beneficial to discuss the practical limitations of such implementations and if/how these limitations can be resolved.