



University of Stuttgart
Germany



SPP 1929 – Seminar

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Study of Rydberg excitation in thermal atomic vapor

Rydberg atoms exhibit strong dipole-dipole or van der Waals interactions which can be orders of magnitude larger than the interaction between ground state atoms. Due to strong Rydberg-Rydberg interaction, coherent driving of the atoms to the Rydberg state using monochromatic light fields make it a unique many body quantum system.

One of the striking examples is Rydberg blockade where interaction can suppress Rydberg excitation of an ensemble of atoms to a single excitation inside a single blockade volume. The second example is Rydberg anti-blockade where interaction can induce the enhancement in excitation to the Rydberg state. These phenomena are extensively studied in cold atomic systems.

In this talk, I will discuss the experimental demonstration and underlying physics of these phenomena in thermal atomic vapor.