

Speaker: Vyacheslav Shathokin, University of Freiburg

Title: Multiple quantum coherence signals in dilute thermal gases: theory meets experiment

Date: Tuesday, February 20th, 09.30 am

Place: Seminar room 915

Multiple quantum coherence signals in dilute thermal gases: theory meets experiment

Abstract: Multiple quantum coherence (MQC) signals are a collective effect that can be observed in fluorescence emitted by inhomogeneously broadened and dilute ensembles of atoms, but some experts doubt that the dipole-dipole interactions are required for the emergence of MQC. Recently, we have put forward an open quantum systems theory of MQC signals [1,2] which underpins the necessity of the interactions and which found a good qualitative agreement with observations. In the present talk, I will survey our theory, its predictions that were confirmed in the lab, and also discuss open problems appearing when the theory comes to face with new experiments.

[1] B. Ames, E.G. Carnio, A. Buchleitner, and V.N. Shatokhin, Pulse area dependence of multiple quantum coherence signals in dilute thermal gases, JCP 155, 044306 (2021)

[2] B. Ames, E.G. Carnio, V.N. Shatokhin, and A. Buchleitner, Theory of multiple quantum coherence signals in dilute thermal gases, NJP 24, 013024 (2022)