



Physical Sciences Seminar

Quantum control of ultracold molecular samples

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Host: Johann Danzl

We present ultracold-molecule platform for purposes of quantum simulation and quantum computing. We detail our quantum engineering approach to generate ultracold samples of polar molecules in the regime of quantum degeneracy. Such samples are ideal for quantum simulation purposes with many-body spin systems and for probing novel phases and phase transitions in view of the long-range dipole-dipole interactions between the molecules. Our choice of molecule is the RbCs molecule, which is a boson, and we have started a project on fermionic KCs. The crucial step in producing low-entropy samples of ground-state RbCs molecules is to efficiently form Rb-Cs atom pairs out of quantum degenerate Rb resp. Cs samples as precursors to molecule formation. This formation is done in the presence of an optical lattice potential. Specifically, the atom pairs are created by suitably mixing a Cs Mott insulator with a superfluid Rb sample. We give an outlook on our goal to produce a molecular quantum simulator.

Wednesday, May 23, 2018 02:30pm - 03:30pm

Big Seminar room Ground floor / Office Bldg West (I21.EG.101)



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station.

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<https://ista.ac.at/en/campus/how-to-get-here/> The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.