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Institut für PHYSIK

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spricht

Prof. Dr. Silke Ospelkaus
Institut für Quantenoptik
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über

“Ultracold polar molecules”

Tremendeous progress in the preparation and control of ultracold molecular gases promise to open exciting new research opportunities. Molecules rotate and vibrate and therefore offer many more quantum degrees of freedom than their atomic counterparts. Polar molecules interact via strong and long-range anisotropic interactions. These unique molecular properties provide largely unexplored novel opportunities. These range from the control of ultracold chemical reactions, precision measurements to strongly correlated dipolar quantum many-body systems. In this talk, I will take you on a tour through preparation and control of molecular quantum systems. We will see how ultracold all ground state molecular quantum systems can be efficiently created by means of a controlled chemical reaction at ultracold temperature; we will discuss how these molecular ensembles can be used to probe quantum chemistry and how chemical reactions can then be controlled and understood by simple laws of quantum mechanics. Finally, we will discuss prospects of these systems as novel dipolar quantum many-body systems.

Einladender: Prof. Dr. Claus Lämmerzahl