

# Experiments with cold molecular lanthanides

*Wednesday, 13 September 2023 22:40 (20 minutes)*

Our group is studying the unique features of lanthanide atoms, such as dysprosium, for molecular quantum science.

We are building a new apparatus for controlling ultracold reactions between dysprosium atoms and dimers using an optical cavity. We report on the realization of a MOT of dysprosium and how we plan to achieve a molecular BEC.

On the side, we are exploring the optical spectra of dysprosium-bearing molecules and discovered a new properties that enables quantum-state-resolved creation of internally cold molecular ions. We discuss the new opportunities from this effect, in particular related to eEDM experiments.

**Primary author:** VALTOLINA, Giacomo (FHI - MPG)

**Co-authors:** FIELICKE, André; MEIJER, Gerard; SEIFERT, Johannes; DUERBECK, Marian; SCHALLER, Sascha

**Presenter:** VALTOLINA, Giacomo (FHI - MPG)

**Session Classification:** Poster Session III

**Track Classification:** Other