

Dipolar supersolids: From magnetic atoms to polar molecules

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First, I will discuss the new possibilities that bulk molecular Bose-Einstein condensates may open up for dipolar many-body physics in the near future. Building on our work on dipolar droplets and supersolids that form from weakly dipolar atoms, I will show how ultracold molecules and microwave shielding can provide fundamentally new insights into these exotic states of matter. Second, I will report on our progress towards laser cooling of BaF molecules to ultracold temperatures. Due to its high mass and complex level structure, this molecular species is notoriously difficult to cool, but it shows high promise for various types of precision measurement applications.

Primary author: LANGEN, Tim (University of Stuttgart)

Presenter: LANGEN, Tim (University of Stuttgart)

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