

**Plenary Talk**

PV I Mon 9:00 e415

**“Atomic physics” with diatomic molecules** — ●DAVID DEMILLE  
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Our group is extending the methods of modern atomic physics to the more complex system of diatomic molecules. Though the vibrational and rotational degrees of freedom of molecules make them more difficult to control, they also provide new features of broad use for “atomic physics”-type experiments. I will discuss two ongoing experiments of

this type. In one, we have used a molecule to dramatically amplify the observable effect of an electric dipole moment (EDM) of the electron. This allowed us to search for the electron EDM with sensitivity sufficient to test theories, such as weak-scale supersymmetry, where new particles and interactions appear at the TeV energy scale. In a second experiment, we are applying the technique of laser cooling to diatomics. I will describe recent results demonstrating magneto-optical trapping of SrF molecules at temperatures as low as 400  $\mu$ K.