Abstract Submitted
for the DAMOP20 Meeting of
The American Physical Society

A Buffer Gas Beam Source for Barium Monofluoride and Progress Towards Laser Cooling of the Molecular Beam RALF ALBRECHT, MARIAN ROCKENHAEUSER, TIM LANGEN, 5. Physikalisches Institut and Center for Integrated Science and Technology IQST, University of Stuttgart
— Cold molecular gases are the starting point for a large number of novel and interdisciplinary applications ranging from few- and many-body physics to cold chemistry and precision measurements. Especially heavy polar molecules, such as barium monofluoride, are perfect candidates for tests of fundamental symmetries and studies of complex quantum systems with strong, long-range interactions. However, in comparison to atoms, the preparation of molecular gases in the sub-Kelvin regime is complicated by their complex vibrational and rotational level structure and the lack of closed transitions for optical cycling. Nevertheless, thanks to favorable Franck-Condon factors and selection rules, quasi-cycling transitions can be identified for many molecular species, including barium monofluoride. In this contribution, we will report on our buffer gas beam source for slow and internally cold barium monofluoride molecules. Moreover, we will present our progress towards one-dimensional Doppler cooling of the molecular beam.

Ralf Albrecht
University of Stuttgart

Date submitted: 15 Jan 2020 Electronic form version 1.4