

Abstract Submitted  
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**Cryogenic beam sources: towards trapping and cooling polar molecules** DAVID GLENN, EDWARD SHUMAN, JOHN BARRY, DAVID DEMILLE, Yale University — We report on the continuing development of a cryogenic helium buffer-gas cooled molecular beam source. We have carefully characterized the properties of this source for several molecular species and in a variety of buffer-gas flow regimes, ranging from the effusive (thermal mean velocity, moderate flux), to the deeply hydrodynamic (large forward velocity, high-flux, high collimation). We describe efforts to electrostatically guide molecules from this source, as well as investigations into the possibility of performing transverse and/or longitudinal laser cooling on the beam. We also describe efforts towards confining molecules from this source in a microwave-frequency quasi-optical dipole trap.

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