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Kinematic cooling of molecules in a magneto-optical trap KEN TAKASE, DAVID W. CHANDLER, KEVIN E. STRECKER, Sandia National Labs, Livermore, Ca — We will present our current progress on a new experimental technique aimed at slowing and cooling hot molecules using a single collision with magneto-optically trapped atoms. Kinematic cooling, unlike buffer gas and sympathetic cooling, relies only on a single collision between the molecule and atom to stop the molecule in the laboratory frame. This technique has recently been demonstrated in a crossed atomic and molecular beam machine to produce 35mK samples of nitric oxide via a single collision with argon [1]. In this technique we replace the atomic beam with a sample magneto-optically trapped atoms. We are currently designing and building a new apparatus to attempt these experiments. [1] Kevin E. Strecker and David W. Chandler (to be published)

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