

TIME RESOLVED MILLIMETER-WAVE DOUBLE RESONANCE MEASUREMENTS OF INELASTIC COLLISIONS OF NO-He AT 4.2 K

C. D. BALL, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA 02138; F. C. DE LUCIA, Department of Physics, The Ohio State University, Columbus, OH 43210.

We have directly measured Λ -doublet and hyperfine branching ratios and absolute cross sections for rotationally inelastic collisions of NO-He. We employed a collisional cooling cell at 4.2 K in conjunction with time resolved millimeter-wave/millimeter-wave double resonance techniques. The data were analyzed in the context of tensor opacities, which characterize the electrostatic interaction, and angular momentum recoupling, justified by the "spectator" role of the nuclear spin during a collision. Our cross sections agree qualitatively with theoretically predicted propensity rules.