TIME-RESOLVED ENERGY TRANSFER STUDIES OF LOW TEMPERATURE PARA-NH_3 - He COLLISIONS

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We report results of low temperature (5-15 K) experimental studies of para-NH_3 in collisions with He using time-resolved MW - MW techniques. In these studies, ammonia is collisionally cooled in a low temperature cell filled with a background of helium. A short pump pulse is used to excite a (*J, K*) inversion pair while a second weak source probes nearby inversion transitions. For para-NH_3 only the (1, 1) and (2, 2) levels have significant population at these temperatures. Adding in the inversion doublets, this is effectively a four-level system, making it feasible to extract approximate state-to-state collision rates. We will present our experimental results and compare them to state-to-state cross sections calculated using recent NH_3-He potential surfaces.