ENERGY GAP DEPENDENCE IN THE NON-ADIABATIC PREDISSOCIATION DYNAMICS OF CN($A^2\Pi$)-Ne.

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Collisional energy transfer between the $A^2\Pi$ and $X^2\Sigma^+$ states of CN is known to be facile. This process is somewhat unusual in that the transfer cross section (measured at room temperature) appears to be insensitive to the energy gap between the initial and final levels [a].

By characterizing the electronic predissociation of CN($A^2\Pi$)-Ne we have investigated the half-collision analog of CN(A)+Ne$\rightarrow$CN(X)+Ne energy transfer [b]. In sharp contrast to the full-collision dynamics, the predissociation rate is strongly dependent on the energy gap. To facilitate interpretation of the collision and predissociation dynamics, Yang and Alexander [c] have recently computed potential energy surfaces and non-adiabatic coupling matrix elements for CN-Ne. In this talk we will present an overview of the spectroscopy of CN-Ne, the results of OODR predissociation rate measurements, and a theoretical discussion of the dynamics.

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[c] M. Yang and m. H. Alexander, J. Chem. Phys., submitted.