

Abstract Submitted
for the GEC05 Meeting of
The American Physical Society

**Measurement of the Elastic and Vibrational Cross Sections in N₂
Over a Wide Angular Range** MICHAEL ALLAN, University of Fribourg —

The poster will report on the recent improvements of the techniques to measure elastic and inelastic electron-molecule cross sections. Emphasis will be given on the measurement of the cross sections as a function of scattering angle over a large angular range using the ‘magnetic angle changer’ (MAC) invented by Frank Read and co-workers and on the measurements at low energies. It will be shown that measurement of cross sections in general and the use of the MAC device in particular require complex strategies to control instrumental drift and to determine the instrumental response function over wide ranges of energies and scattering angles, and that the results may to some degree depend on the details of these strategies. The procedures will be illustrated with measurement of elastic and vibrational cross sections in N₂. The $v = 0 \rightarrow 1$ cross section in the resonance region was measured in the full angular range $0^\circ - 180^\circ$, elastic cross sections were in the range of about $10^\circ - 180^\circ$, the lower limit being dependent on the electron energy. The results agree well with the high quality theoretical results of Morrison, Sun and Hao. The integral and momentum transfer cross sections derived from the differential data agree well with swarm data.

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Date submitted: 09 Jun 2005

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