Title (Talk): Temperature-Dependent Photodissociation Cross Sections and Rates for H_2S and NH

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Abstract (Talk):

The photodissociation of molecules impacts the composition and dynamics of many astronomical systems. The vacuum ultraviolet irradiation of exoplanets by their host star leads to complex photochemistry in their upper atmosphere. In the study of observable exoplanets and other hot astronomical bodies, it is thus critical to understand the effect of temperature on such processes. For instance, H_2S is an important equilibrium sulfur species in exoplanetary atmospheres that is expected to yield a variety of subsequent photochemical products. This is of particular importance with recent James Webb Space Telescope (JWST) detections of SO_2. Accordingly, this work presents preliminary temperature-dependent photodissociation cross sections for both H_2S and NH. All nuclear motion calculations were performed with exact kinetic energy operators using *ab initio* potential energy, coupling and transition dipole moment surfaces/curves. These data are compared to experimental measurements at room temperature and photodissociation rates are calculated for several important radiation fields.