XUV LASER PHOTOIONIZATION SPECTROSCOPY AT A RESOLUTION OF 0.008 CM$^{-1}$


A new broadly tunable (7-17 eV) narrow bandwidth (0.008 cm$^{-1}$) VUV laser system is presented. The system has been used to record photoionization spectra of small molecules (N$_2$, CO) in the vicinity of their ionization threshold. At the high resolution detailed information can be extracted on the spectroscopic and dynamic properties of electronically excited states, in particular Rydberg states.