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Photodetachment spectroscopy of cold trapped molecular anions near threshold ROLAND WESTER, OLGA LAKHMANSKAYA, MALCOLM SIMPSON, SIMON MURAUER, MARKUS NTZOLD, ALICE SCHMIDT-MAY, ROBERT WILD, ERIC ENDRES, University of Innsbruck, VIATCHESLAV KOKOOULINE, University of Central Florida — Negatively charged molecular ions have drawn a lot of attention in recent years, in particular owing to the detection of several molecular anions in cold interstellar molecular clouds. Cryogenic radiofrequency ion traps are well suited tools to study bound-bound spectroscopy and photofragmentation processes with high resolution and high sensitivity. We have studied the photodetachment of the amide anion NH_2^- and the interstellar anions CN^- and C_3N^- near threshold and have compared the spectra to the threshold behavior given by the Wigner threshold laws. These data reveal information about the role of the permanent electric dipole moment of the neutral product, which is important for the description of anion formation by electron attachment. For the NH_2^- anion, the spectra have allowed us to probe the lowest two rotational transitions in this ion near 447 GHz and 934 GHz and the contribution of the different hyperfine states.

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