TWO-DIMENSIONAL (2+n) REMPI SPECTROSCOPY: STATE INTERACTIONS, PHOTOFRAGMENTATIONS AND ENERGETICS OF THE HYDROGEN HALIDES

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Mass spectra are recorded for one-colour (2 + n) resonance enhanced multiphoton ionization (REMPI) of HX (X = Cl [a], Br) as a function of resonance excitation energy to obtain two-dimensional REMPI data. Perturbations due to Rydberg to ion-pair state interactions show as line shifts, ion signal intensity variations as well as band width broadenings depending on rotational quantum numbers, J'. The data allow determination of parameters relevant to the nature and strength of state interactions as well as dissociation and ionization processes. Alterations in X^+ and HX^+ signal intensities prove to be very useful for spectra assignments.

[a] Agust Kvaran, Kristjan Matthiasson and Huasheng Wang, " Two-Dimensional (2+n) Resonance Enhanced Multiphoton Ionization of HCl: State Interactions and Photorupture Channels via Low-Energy Triplet Rydberg States ", J. Chem. Phys., **131**(4), 044324, (2009).