PHOTOION-PAIR PRODUCTION IN HF, DF AND $(HF)_2$

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The dissociation processes of $HF/DF + h\nu \rightarrow H^+/D^+ + F^-$ and $(HF)_2 + h\nu \rightarrow HFH^+ + F^-$ have been studied through single photon excitation with coherent vacuum ultraviolet light. For HF and DF, the laser was scanned around the ion-pair dissociation energies. The spectra demonstrate that the ion-pair production could be greatly enhanced through the coupling between the ion-pair states and the Rydberg states converging to certain levels of HF^+/DF^+. The results from our current high resolution study lead to different conclusions than those resulting from lower resolution synchrotron experiments [a]. For the ion-pair production of $(HF)_2$, some preliminary results and possible explanations will be presented.

[a] A. J. Yencha, A. Hopkirk, J. R. Grover, B-M. Cheng, H. Lefebvre-Brion, and F. Keller, J. Chem. Phys. 103, 2882 (1995)