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Photoassociative Spectroscopy of Ultracold Argon and Krypton¹ M.K. OMAR, W.D. WILLIAMS², C.I. SUKENIK, Department of Physics, Old Dominion University, Norfolk, VA — We report on photoassociative spectroscopy experiments performed separately on ultracold ⁴⁰Ar and ultracold ⁸⁴Kr with the spectroscopy laser tuned around the trapping transition for each species $(ns[3/2]_2 \rightarrow np[5/2]_3$ where n = 4 for argon and n = 5 for krypton). Previous studies in argon observed several discrete features in the spectrum that have now been positively identified as arising from otherwise undetectable frequency sidebands on the spectroscopy laser and not from molecular structure. Spectra have been taken over a range of laser intensities and show a broad (several GHz) signature of single photon photo-association, but with no individual vibrational levels resolved. We will discuss our results and compare our spectra to those obtained in ultracold, noble gas photoassociative spectroscopy experiments conducted by other groups in recent years.

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> Charles Sukenik Old Dominion University

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