

# Ultracold Physics at UConn, Including Spectra of Ultracold Molecules

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The Physics Department at UConn includes seven faculty involved (often collaboratively) in a wide variety of ultracold physics projects. I will briefly survey a sample of these projects and then focus on recent developments of techniques for studying the electronic spectroscopy of ultracold molecules formed by photoassociation of ultracold atoms. In particular, this work, pioneered in our lab by Dr. Dajun Wang and carried out in collaboration with Professors Ed Eyler and Phil Gould, has focused on demonstrations of high resolution multiple resonance spectroscopy for highly vibrationally excited levels of the  $X^1\Sigma^+$  state and the  $a^3\Sigma^+$  state of  $^{39}K^{85}Rb$ . Such demonstrations show the power and sensitivity of such techniques for studying states with exotic potential curves at intermediate and large internuclear distances, for determining rotational and hyperfine structure of such vibrational levels, and for precisely defining binding energies of such high levels.