**Cecilia Payne-Gaposchkin Doctoral Dissertation Award in Astrophysics Finalist (2021): Clues to the Nature of Dark Matter from Low-Mass Galaxies Beyond the Local Group**

SHANY DANIELI

Low mass galaxies have provided some of the best constraints we have on the nature of dark matter. In my thesis, I used innovative methods and instrumentation as well as original observations to discover such faint galaxies in the nearby universe and study their dark matter content. I characterized various aspects of the intriguing population of the so-called Ultra Diffuse Galaxies in group and cluster environments. Ultra Diffuse Galaxies hold the promise of new constraints on low mass galaxy dynamics, as their spatial extent and often significant globular cluster populations provide probes on spatial scales where dark matter should dominate the kinematics. Using Keck and Hubble Space Telescope observations, I provided the strongest evidence yet for the existence of a class of galaxies that lack dark matter. I also worked on the construction, software design, and operations of the Dragonfly Telescope which was designed to image large and extremely faint structures in the night sky. I designed and am leading the Dragonfly Wide Field Survey, a comprehensive survey of the low surface brightness Universe. This innovative and field-leading new survey provides unique constraints on the census and properties of dwarf galaxies beyond our local galactic neighborhood.