

# Searching for the lowest luminosity companions of the Milky Way

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The Milky Way satellites are among the least luminous and most dark matter-dominated galaxies in the known universe. I present on a search for low-luminosity dwarf galaxy companions of the Milky Way in three years of data from the Dark Energy Survey (DES) and the Panoramic Survey Telescope and Rapid Response System (Pan-STARRS PS1). Together, these two surveys cover roughly three-quarters of the sky with deep multi-band optical imaging. I will describe a search algorithm, SimpleBinner, for detecting satellite galaxy candidates by their individually resolved stars. I apply this algorithm consistently to the actual survey data and simulated satellites in order to characterize our search sensitivity. In this talk, I will present on the performance of SimpleBinner on DES and PS1 data and discuss the ongoing search for new ultra-faint stellar systems in DES, PS1. I will also note our recent discovery of a faint halo star cluster in the Blanco Imaging of the Southern Sky (BLISS) Survey using DECam. Finally, using these results, I comment on constraints of dark matter models.

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