



PHYSICS AND ASTRONOMY COLLOQUIUM

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“First Results from Dragonfly”

Abstract

I will describe some early results from the Toronto/Yale Dragonfly Telephoto Array (a.k.a. Dragonfly), a robotic imaging system optimized for the detection of extended ultra low surface brightness structures. Dragonfly is comprised of multiple commercial 400 mm f/2.8 telephoto lenses which have high performance sub-wavelength nanostructure optical coatings designed to minimize scattered light and ghosting. The instrument is optimized to explore the night sky in a different part of parameter space from conventional telescopes, and Dragonfly’s wide-field low surface brightness imaging performance is capable of directly imaging low surface brightness structures (such as galactic streams, galaxy stellar halos and faint dwarf galaxies) about 10x fainter than is possible with conventional telescopes. Our main goal with Dragonfly is to map out the extended stellar halos predicted by hierarchical galaxy formation models, but along the way we are discovering that the nearby Universe is full of surprising new low surface brightness phenomena. In this talk I’ll describe how Dragonfly works and show some early results, mainly focusing on the properties of ultra-faint stellar halos, though I’ll also report on the properties of a new class of ghostlike galaxies that are as big as the Milky Way but have about 1/100 of its mass.

Wednesday, October 14, 2015

3:00 p.m.

Elliott Building

Room 167