Future Observational Prospects at Mid-IR Wavelengths & the AGN Torus

A mid-infrared (MIR) imager and spectrometer is being investigated for possible construction in the early operation of the Thirty Meter Telescope (TMT). Combined with the MIR adaptive optics (AO) system (MIRAO), the instrument will afford ~15 times higher sensitivity and ~4 times better spatial resolution (0.07") with a greatly improved and stable Strehl ratio at 10um compared to the images delivered by the fast guiding systems of 8m-class telescopes. Through exploiting the large collecting area of the TMT, a high-dispersion spectroscopy mode unrivaled by other ground- and space-based facilities is planned. Such capabilities offer the possibility for breakthrough science, as well as ‘workhorse’ observing modes of imaging and low/moderate spectral resolution. In this presentation Dr. Packham will detail the approach we followed to initially define the instrument and some of the science cases enabled, with a particular focus on the AGN torus.