

2023—2024 ASTROPHYSICS SEMINAR SERIES**The transient mid-infrared sky: Revealing the enshrouded births, deaths and afterlives of stars through cosmic time**

The growth of mass in stars and supermassive black holes (SMBHs) underpins every area of astrophysics. It is now becoming increasingly clear that short-lived transient outbursts caused by eruptive mass transfer episodes likely dominate the growth processes. Yet, direct observations remain severely limited either due to their intrinsically red emission, or absorption due to intervening dust and gas which make these phenomena invisible in optical/X-ray time domain surveys. In this talk, I will present the WISE transient pipeline -- a novel effort aimed at a systematic all-sky census of the dynamic mid-infrared sky using more than a decade of data from the NEOWISE space mission. Utilizing the highest spatial resolution images together with state-of-the-art image subtraction algorithms, we have created a statistically complete sample of 15 million infrared transients in NEOWISE data. Embarking on a large ground-based follow-up program, I will present results from multi-wavelength characterization of the brightest mid-infrared transients, revealing i) a complete census of proto-stellar growth through transient outbursts, ii) a new class of dust obscured stellar mergers in low mass stars, iii) new insights into the fiery fates of close planetary systems, iv) missed tidal disruption events by SMBHs in nearby galaxies and iv) highly variable accretion outbursts in Active Galactic Nuclei in the near and distant universe.

**Monday, October 23rd****3:30 - 4:30 p.m.****CAS 502****Kishalay De****Massachusetts Institute of Technology**