One proposed method to look for and characterize non-transiting planets is via the planetary infrared excess (PIE) technique, which takes inspiration from searches for disks around stars but instead of a disk we’re detecting the flux from a planet.

The majority of planets in the solar-neighborhood are inaccessible to JWST and HWO, due to either their non-transiting nature or separation from their host star. How will we discover and characterize our neighbors?

- Multi-planet systems present and additional complexity due to potential source confusion.
- We examined the information gained from a PIE analysis of the TRAPPIST-1 system as information was revealed through time.

Results:

- In non-transiting situations, PIE can determine planets are present and measure their equilibrium temperatures.
- In compact scenarios, semi-major axis constraints are critical.