

Transient Phenomena and Physical Processes Around Supermassive Black Holes

Contribution ID: 5

Type: **Invited talk**

The Double Tidal Disruption Event

Tuesday, October 15, 2024 3:55 PM (25 minutes)

AT 2022dbl was a typical optical-UV tidal disruption event (TDE) in a typical TDE host galaxy. Then, 700 days after the first flare, a second, almost identical, flare occurred at the same position. Ruling out lensing and two unrelated events, we conclude that the first flare of AT 2022dbl was a partial disruption. The question remains whether the second flare was a full disruption or another partial one. We will know for sure if we see a third flare in early 2026. However, both options have far reaching implications for our understanding of optical TDEs: Given how typical of the class both flares are, either all optical TDEs are partial disruptions, or some are partial and some are full disruptions, with very little difference in flare characteristics. Either case will require that we re-visit our most basic optical TDE model assumptions.

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Session Classification: Session