



# KITP Conference: Anticipating the Rising Tide of Tidal Disruption Events: Theory and Observations

(Apr 23-26, 2024)

Coordinators: Kate Alexander, Eric Coughlin, Decker French and Suvi Gezari

## Tuesday, Apr 23, 2024

### X-ray and radio observations of TDEs, Chair: Kate Alexander (U Arizona)

|         |                                         |                                                                                                                                          |
|---------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 8:50am  | Lars Bildsten (KITP)                    | Welcome[Video]                                                                                                                           |
| 9:00am  | Muryel Guolo (Johns Hopkins)            | A systematic analysis of the X-ray emission in optically selected TDEs[Video][CC]                                                        |
| 9:30am  | Adelle Goodwin (Curtin U)               | Radio emission from tidal disruption events: unveiling a population of prompt outflows launched during the stellar disruption[Video][CC] |
| 10:00am | Jean Somalwar (Caltech)                 | Discovering Tidal Disruption Events in Radio Surveys[Video][CC]                                                                          |
| 10:30am |                                         | Morning Break                                                                                                                            |
| 11:00am | Yuhan Yao (UCB)                         | Sub-relativistic Outflow and Hours-Timescale Episodic Mass Accretion Rate Drops during Super-Eddington Accretion in AT2022lri[Video][CC] |
| 11:30am | Yvette Cendes (Harvard-Smithsonian CfA) | Ubiquitous Delayed Radio Emission in TDEs[Video][CC]                                                                                     |
| 12:00pm | Aprajita Hajela (U Copenhagen)          | Unraveling the Complexity of Tidal Disruption Events with Multi-wavelength Observations of ASASSN-15oi[Embargoed]                        |
| 12:30pm |                                         | Lunch Break                                                                                                                              |

### Optical/UV emission from TDEs+host galaxies, Chair: Thomas Wevers (STSCI)

|        |                              |                                                                                                                                                             |
|--------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2:00pm | Iair Arcavi (Tel Aviv U)     | Observations of TDEs and Other Nuclear Transients[Slides][Video]                                                                                            |
| 2:30pm | Erica Hammerstein (Maryland) | Population Studies of Tidal Disruption Events and their Hosts: Understanding Host Galaxy Preferences & the Origin of the UV/Optical Emission[Slides][Video] |
| 3:00pm | Yannis Liodakis (MSFC)       | Understanding Tidal Disruption Events through their polarized emission[Slides][Video]                                                                       |
| 3:30pm |                              | Afternoon Break                                                                                                                                             |
| 4:00pm | Sebastian Gomez (STScI)      | The Search for Tidal Disruption Events[Slides][Video][CC]                                                                                                   |
| 4:30pm | Megan Masterson (MIT)        | A New Population of Mid-Infrared-Selected Tidal Disruption Events[Slides][Video][CC]                                                                        |
| 5:00pm | Ann Zabludoff (Arizona)      | Using Dwarf Post-Starburst Galaxies as Probes of TDEs around Intermediate Mass Black Holes[Video][CC]                                                       |
| 5:30pm |                              | SHUTTLE TO BWSCI                                                                                                                                            |

## Wednesday, Apr 24, 2024

### TDE theory: disruption process, stream evolution, Chair: Eric Coughlin (Syracuse)

|         |                                 |                                                                                                                         |
|---------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 9:00am  | Megha Sharma (Monash)           | Partial tidal disruption events: elixir of life[Video][CC]                                                              |
| 9:30am  | Debojyoti Garain (IIT Kanpur)   | Partial tidal disruptions of spinning eccentric white dwarfs by spinning intermediate mass black holes[Video][CC]       |
| 10:00am | Pavan Vynatheya (MPA)           | Exploring the remains of stars disrupted by stellar black holes[Slides][Video][CC]                                      |
| 10:30am |                                 | Morning Break                                                                                                           |
| 11:00am | Kyle Kremer (Caltech)           | Hydrodynamics of Collisions and Close Encounters between Compact Objects and Stars in Dense Stellar Environments[Video] |
| 11:30am | Ananya Bandopadhyay (Syracuse)  | The Peak of the Fallback Rate from Tidal Disruption Events: Dependence on Stellar Type[Slides][Video]                   |
| 12:00pm | Fulya Kiroglu (Northwestern)    | Accretion-induced spin-up of black holes through TDEs in dense star clusters[Slides][Video]                             |
| 12:30pm |                                 | Lunch Break                                                                                                             |
|         |                                 | Disc Formation and Accretion, Eric Coughlin (Syracuse)                                                                  |
| 2:00pm  | Jane Dai (HKU)                  | Tidal disruption Events: From Accretion and Outflow to Emissions[Slides][Video]                                         |
| 2:30pm  | Richard Saxton (ESAC)           | What can X-ray selected TDEs tell us about the physics of disruption and accretion?[Video]                              |
| 3:00pm  | Xiaoshan Huang (Caltech)        | Pre-peak emission in TDEs[Video]                                                                                        |
| 3:30pm  |                                 | Afternoon Break                                                                                                         |
| 4:00pm  | Clement Bonnerot (U Birmingham) | First light from tidal disruption events[Video][CC]                                                                     |
| 4:30pm  | Simona Pacuraru (U Birmingham)  | Magnetic field evolution in tidal disruption events[Slides][Video][CC]                                                  |
| 5:00pm  | Fitz Hu (Monash)                | Why do tidal disruption events shine in optical and radio more than X-ray[Slides][Video][CC]                            |
| 5:30pm  |                                 | RECEPTION                                                                                                               |
| 6:00pm  |                                 | SPECIAL EVENTS DINNER                                                                                                   |
| 7:30pm  |                                 | SHUTTLE TO BWSCI                                                                                                        |

## Thursday, Apr 25, 2024

### Connecting Theory and Observations/Rates, Chair: Itai Linial (IAS)

|        |                                 |                                                                                          |
|--------|---------------------------------|------------------------------------------------------------------------------------------|
| 9:00am | Sjoert Van Velzen (Leiden Obs.) | Current status of TDE observations: the promise of population studies[Slides][Video][CC] |
| 9:45am | Brian Metzger (Columbia)        | Cooling Envelope Model for Tidal Disruption Events[Slides][Video][CC]                    |

10:30am

**Morning Break**

11:00am Tatsuya Akiba (CU Boulder)

On the Hunt for Rogue Supermassive Black Holes Using Tidal Disruption Events[\[Slides\]](#)[\[Video\]](#)[\[CC\]](#)

11:30am Yihan Wang (UNLV)

Enhanced Tidal Disruption Event Rate in Active Galactic Nuclei[\[Video\]](#)[\[CC\]](#)

12:00pm Grant Weldon (UCLA)

A model for repeated tidal disruption events in supermassive black hole binaries[\[Slides\]](#)[\[Video\]](#)[\[CC\]](#)

12:30pm

**Lunch Break**

**Jets and Outflows, Chair: Eliot Quataert (Princeton)**

2:00pm Assaf Horesh (Hebrew U)

Delayed Radio Flares - A New Phenomenon in Tidal Disruption Events[\[Slides\]](#)[\[Video\]](#)[\[CC\]](#)

2:30pm Paz Beniamini (Open U Israel)

Relativistic outflows in tidal disruption events: rates, energetics and implications for UHECRs[\[Slides\]](#)[\[Video\]](#)[\[CC\]](#)

3:00pm Peter Clark (Portsmouth)

Extreme Coronal Line Emitters: Tidal disruption events in complex environments[\[Slides\]](#)[\[Video\]](#)[\[CC\]](#)

3:30pm

**Afternoon Break**

4:00pm Collin Christy (U Arizona/Steward Observatory)

Radio Evolution of the Tidal Disruption Event ASASSN-19bt: Evidence for a Highly Off-Axis Relativistic Jet[\[Video\]](#)[\[CC\]](#)

4:30pm Tatsuya Matsumoto (Kyoto U)

Origins of late-time radio emission in TDEs[\[Video\]](#)[\[CC\]](#)

5:00pm Igor Andreoni (Maryland)

A Luminous Relativistic Tidal Disruption Event Identified by the ZTF Optical Survey[\[Video\]](#)[\[CC\]](#)

5:30pm

**RECEPTION**

6:00pm

**SPECIAL EVENTS DINNER**

7:30pm

**SHUTTLE TO BWSCI**

**Friday, Apr 26, 2024**

**Quasi-periodic eruptions, Chair: Brian Metzger (Columbia)**

9:00am Eliot Quataert (Princeton)

The Fates of Stars Orbiting too Close to Massive Black Holes[\[Video\]](#)[\[CC\]](#)

9:45am Riccardo Arcodia (MIT)

QPEs and their connection with TDEs: where do we stand?[\[Slides\]](#)[\[Video\]](#)[\[CC\]](#)

10:30am

**Morning Break**

11:00am Wenbin Lu (UCB)

General Constraints on the Origin of Quasi-Periodic Eruptions[\[Video\]](#)[\[CC\]](#)

11:30am Itai Linial (IAS)

QPEs from Star-Disk Interaction[\[Video\]](#)[\[CC\]](#)

12:00pm Joheen Chakraborty (MIT)

Testing your models with long-term monitoring of QPEs[\[Slides\]](#)[\[Video\]](#)[\[CC\]](#)

12:30pm

**Lunch Break**

**Repeating nuclear transients, ambiguous nuclear transients, other weird things , Chair: Ann Zabludoff (Arizona)**

2:00pm Thomas Wevers (STScI)

Repeating nuclear transients: one (not so big) happy family?[\[Video\]](#)[\[CC\]](#)

2:30pm Matt Nicholl (Queen's Belfast)

Have we detected QPEs in a nearby TDE?[\[Video\]](#)[\[CC\]](#)

3:00pm Jason Hinkle (Hawaii)

The Elusive Class of Ambiguous Nuclear Transients: Observational Trends, Physical Interpretations, and Open Questions[\[Slides\]](#)[\[Video\]](#)[\[CC\]](#)

3:30pm

**Afternoon Break**

4:00pm Nicholas Earl (UIUC)

AT2020nov: Tidal Disruption Event within a Pre-existing AGN-like Disk[\[Video\]](#)[\[CC\]](#)

4:30pm Denyz Melchor (UCLA)

Repeated tidal disruption events in supermassive black hole binaries[\[Video\]](#)[\[CC\]](#)

5:00pm Alessia Franchini (Zurich)

Can QPEs shed light on TDEs?[\[Slides\]](#)[\[Video\]](#)[\[CC\]](#)

5:30pm **CONFERENCE END SHUTTLE TO BWSCI \*Also available to SB Airport and SB Airbus, Goleta location.(See Registration Desk BEFORE FRIDAY to sign up.)**