

KITP : Building Bridges: Towards a Unified Picture of Stellar and Black Hole Binary Accretion and Evolution

(Mar 14-17, 2022)

Coordinators: Zoltan Haiman, Kaitlin Kratter, and Yan-Fei Jiang

Monday, Mar 14, 2022

Session: Stars / Compact Objects, Chair: Kaitlin Kratter (Arizona)

8:50am Lars Bildsten (KITP)	Welcome[Video]
9:00am Roman Rafikov (Cambridge)	Circumbinary disks across different scales[Video][CC]
9:45am Matthew Bate (Exeter)	Stellar Binary Accretion and Evolution[Video][CC]
10:30am	Morning Break
11:00am Selma De Mink (MPA) Sophie Schroder (N. Bohr Institute)	Discussion: Orbital Evolution I[Slides][Video][CC][Chat]
11:45am Ondrej Pejcha (Charles U)	Discussion: Missing Physics I[Video][CC][Chat]
12:30pm	Lunch break
2:00pm John Tobin (NRAO)	The Characteristics, Origin, and Evolution of Multiplicity in the Protostellar Phase[Video][CC]
2:30pm Meng Sun (Northwestern)	How tides change the orbit of binaries and a new open-source code to model stellar tides[Slides][Video][CC]
3:00pm Pablo Marchant (KU Leuven)	The role of accretion in the formation of gravitational wave sources[Slides][Video][CC]
3:30pm	Afternoon break
4:00pm Stefan Kraus (Exeter)	Discussion: Observations I[Video][CC]
4:45pm Maxwell Moe (Arizona)	Discussion: Populations I[Slides][Video][CC]
5:30pm	Cocktail Reception
6:00pm	Dinner
8:00pm	Shuttle to BWSCI

Tuesday, Mar 15, 2022

Session: SMBHs, Chair: Zoltan Haiman (Columbia)

9:00am Julie Comerford (CU Boulder)	Supermassive Black Hole Binaries, from Galaxy Mergers to Gravitational Waves[Video][CC]
9:45am Tamara Bogdanovic (Georgia Tech)	From Kiloparsec Scales to Merger: Properties of Dual AGNs that Become Gravitational Wave Sources[Video][CC]
10:30am	Morning break
11:00am Alberto Sesana (UNIMIB) Magdalena Siwek (Harvard)	Discussion: Orbital Evolution II[Video][CC]
11:45am Julian Krolik (Johns Hopkins)	Discussion: Missing Physics II[Video][CC]
12:30pm	Lunch break
2:00pm Xin Liu (U Illinois)	Electromagnetic Observations of Binary Supermassive Black Holes: New Opportunities with Large Synoptic Surveys[Slides][Video][CC]
2:30pm K.E. Saavik Ford (BMCC)	Connecting AGN Accretion Disks to Black Hole Binaries at Multiple Scales[Slides][Video][CC]
3:00pm Chris Tiede (NYU)	Simulating binaries in thin disks[Video][CC]
3:30pm	Afternoon break

4:00pm Daryl Haggard (McGill Space Inst.) [Discussion: Observations II\[Slides\]\[Video\]\[CC\]](#)
Chengcheng Xin (Columbia)

4:45pm Steve Taylor (Vanderbilt) [Discussion: Populations II\[Video\]\[CC\]](#)
Luke Kelley (Northwestern)
Chiara Mingarelli (Flatiron)

5:30pm **Cocktail Reception**

6:00pm **Dinner**

8:00pm **Shuttle to BWSCI**

Wednesday, Mar 16, 2022

Session: Binary Disk Physics, Chair: Dan D'orazio (NBIA)

9:00am Dong Lai (Cornell) [Disks around Binaries and Binaries in Big Disks\[Slides\]\[Video\]\[CC\]](#)

9:45am Steve Lubow (STSCI) [Dynamics of Aligned and Misaligned Circumbinary Disks\[Slides\]\[Video\]\[CC\]](#)

10:30am **Morning break**

11:00am Sterl Phinney (Caltech) [Discussion: Observational Tests of Theory I\[Slides\]\[Video\]\[CC\]](#)

11:45am Roger Blandford (Stanford) [Discussion: Missing Physics III\[Video\]\[CC\]](#)
Sean Mc Williams (West Virginia)

12:30pm **Lunch break**

2:00pm Enrico Ramirez-Ruiz (UCSC) [Accretion Disk Formation in LIGO Black Hole Binaries\[Video\]\[CC\]](#)

2:30pm Adam Dempsey (LANL) [What Does It Take To Merge Binary Black Holes in AGN Disks\[Slides\]\[Video\]\[CC\]](#)

3:00pm Cristiano Longarini (U Milan) [Chasing polar alignment in hierarchical triple systems\[Video\]\[CC\]](#)
Simone Ceppi (Univ. of Milan)

3:30pm **Afternoon break**

4:00pm Hui Li (LANL) [Discussion: Stellar mass binaries in AGN\[Video\]\[CC\]](#)
Barry Mc Kernan (BMCC)

4:45pm Ian Czekala (Penn State) [Discussion: Observational tests of theory II\[Video\]\[CC\]](#)

5:30pm **Cocktail Reception**

6:00pm **Dinner**

8:00pm **Shuttle to BWSCI**

Thursday, Mar 17, 2022

Session: Computational and Ongoing Challenges, Chair: Yan Fei Jiang (Flatiron)

9:00am Zhaohuan Zhu (UNLV) [Grid-based simulations for misaligned circumbinary disks and disk breaking\[Video\]\[CC\]](#)

9:45am Sasha Tchekhovskoy (Northwestern) [Simulating how black holes burp and shine\[Video\]\[CC\]](#)

10:30am **Morning break**

11:00am Laura Blecha (Florida) [Discussion: Connecting different scales\[Slides\]\[Video\]\[CC\]](#)
Scott Noble (GSFC)

11:45am Mark Avara (Cambridge) [Discussion: Code Comparison Projects\[Video\]\[CC\]](#)
Paul Duffell (Purdue)

12:30pm **Lunch break**

- 2:00pm Mark Avara (Cambridge) [3D-GRMHD Evolution of Inspiring Supermassive Black Hole Binaries\[Video\]\[CC\]](#)
- 2:30pm Judit Szulagyi (ETH Zurich) [Accretion inside circumplanetary disks, the equivalents of BH mini-disks\[Video\]\[CC\]](#)
- 3:00pm Philipp Moesta (U Amsterdam) [Simulating accretion in the inner cavity of circumbinary disks\[Video\]\[CC\]](#)
- 3:30pm **Afternoon break**
- 4:00pm Shane Davis (U Virginia) [Discussion: Post processing and Mock Observations\[Video\]\[CC\]](#)
Philipp Moesta (Univ. Amsterdam)
- 5:30pm **Conference end - SHUTTLE TO BWSCI *Also available to SB Airport and SB Airbus, Goleta location. (See Registration Desk BEFORE THURSDAY to sign up.)**