

KAVLI INSTITUTE FOR THEORETICAL PHYSICS
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**KITP Conference: Phenomena, Physics, and Puzzles Of
 Massive Stars and their Explosive Outcomes**

(Mar 20-24, 2017)

**Coordinators: Stephen Justham, Selma de Mink, Nathasha Ivanova, and
 Richard Townsend**

Scientific Advisors: Chris Fryer, Ilya Mandel, Coralie Neiner, and Jorick Vink

Monday, Mar 20, 2017

Introduction and Overview, Chair: Selma de Mink (U Amsterdam)

8:50am	Lars Bildsten (KITP)	Welcome
9:00am	Vicky Kalogera (Northwestern)	Gravitational wave astrophysics for massive stars
9:45am	Frank Timmes (Arizona State)	A bonanza of frontiers
10:30am	Morning Break & POSTERS	

Transport Processes and Envelopes

11:00am	Tamara Rogers (Newcastle)	Angular momentum transport by gravity waves
11:30am	Matteo Cantiello (Flatiron Inst.)	Envelope convection in massive stars and iron opacity
12:00pm	Yan Fei Jiang (KITP)	MHD simulations of massive star envelopes
12:30pm	Lunch Break	

Mass Loss, Mass Gain & Mass Transfer, Chair: Jorick Vink (Armagh Observatory)

2:00pm	Stan Owocki (Delaware)	Theory of stellar winds
2:45pm	Eliot Quataert (Berkeley)	Late-stage mass loss instabilities in massive stars
3:30pm	Afternoon Break & POSTERS	

4:00pm	Paul Ricker (Illinois)	Common-envelope evolution
4:30pm	Fabian Schneider (Oxford)	Outcomes of massive star mergers
5:00pm	Dany Vanbeveren (Brussels)	Massive binary puzzles
5:30pm	SHUTTLE TO BWSCI	

Tuesday, Mar 21, 2017

Asteroseismology, Magnetism & Rapid Rotation, Chair: Anne Thoul (Liege)

9:00am	Ehsan Moravveji (KU Leuven)	Massive-star asteroseismology
9:30am	Daniel Roy Reese (Obs. de Paris)	Seismology of rapidly rotating stars
10:00am	Gerald Handler (Copernicus)	Lessons from BRITE
10:30am	Morning Break & POSTERS	
11:00am	Veronique Petit (Delaware)	Observational constraints on B fields in early type stars
11:30am	Jim Fuller (KITP/Caltech)	Internal magnetic fields in red giants

12:00pm Thomas Rivinius (ESO) The Be star phenomenon

12:30pm **Lunch Break**

Unusual Outcomes & New Events, Chair: Natalia Ivanova (U Alberta)

2:00pm Raffaella Margutti (Northwestern) Observational evidence for pre-SN instabilities & outbursts

2:30pm Scott Adams (Caltech) Searching for failed supernovae

3:00pm Mansi Kasliwal (Caltech) Infrared transients & Gap transients

3:30pm **Afternoon Break & POSTERS**

Current and Upcoming Surveys and Their Impact on Massive-Star Science, Chair: Lars Bildsten (KITP)

4:00pm Ben Shappee (Carnegie) ASAS-SN

4:10pm Todd Boroson (LCO) Las Cumbres Observatory: A New Resource

4:20pm Mansi Kasliwal (Caltech) Zwicky Transient Facility

4:30pm Iair Arcavi (UCSB) BlackGEM

4:40pm Juna Kollmeier (Carnegie) Mapping the Future: After SDSS-IV

4:50pm Conny Aerts (KU Leuven) Gaia & TESS

5:00pm Stephen Smartt (QU Belfast) ATLAS, Pan-STARRS, & ePESSTO

5:10pm Round table discussion of upcoming surveys

5:30pm **POSTERS & RECEPTION**

6:00pm **SPECIAL EVENTS DINNER**

8:00pm **SHUTTLE TO BWSCI**

Wednesday, Mar 22, 2017

Supernovae I, Chair: Nathan Smith (Arizona State)

9:00am Josh Dolence (LANL) Overview of core-collapse explosion mechanisms

9:30am Thomas Janka (MPA) Prospects for explosions in 3D

10:00am Rob Farmer (Arizona State) Variation in pre-supernova model properties

10:30am **Morning Break & POSTERS**

11:00am Stephen Smartt (QU Belfast) Overview of supernova progenitor evidence

11:30am Maryam Modjaz (NYU) Stripped envelope supernovae

12:00pm Dan Patnaude (Harvard SAO) Connecting remnants to explosions and progenitors

12:30pm **Lunch Break**

2:00pm **FREE AFTERNOON-Shuttle Available to BWSCI**

4:00pm **Evening reception at Las Cumbres Observatory. The shuttle is expected to depart from KITP at 4pm.**

Thursday, Mar 23, 2017

Supernovae II, Chair: Elena Pian (INAF, Pisa)

9:00am Dan Kasen (Berkeley) Models for super-luminous supernovae

9:45am Stan Woosley (UCSC) Pulsational pair instability supernovae

10:30am

Morning Break & POSTERS

11:00am Ragnhild Lunnan (Caltech)

Overview of SLSNe & host galaxy properties

11:30am Paolo Mazzali (LJMU)

Dissecting SLSNe & SN Ibc with spectral modelling

12:00pm Frank Tramper (ESO)

Observations of very late stage WR stars

12:30pm

Lunch Break**Supernovae III, Chair: Kenichi Nomoto (Tokyo)**

2:00pm Philipp Podsiadlowski (Oxford)

Binary interactions and stellar transients

2:45pm Thierry Foglizzo (CEA)

The core-collapse angular momentum budget

3:30pm

Afternoon Break & POSTERS

4:00pm Ondrej Pejcha (Princeton)

Inferring Type IIP explosion energies from light-curve modelling

4:30pm Paul Duffell (Berkeley)

Impact of Raleigh-Taylor mixing on Type IIP ejecta and light-curves

5:00pm Iair Arcavi (UCSB)

The impossible supernova

5:30pm

POSTERS & RECEPTION

6:00pm

SPECIAL EVENTS DINNER

8:00pm

SHUTTLE TO BWSCI**Friday, Mar 24, 2017****Gravitational Wave Science, Chair: Ilya Mandel (Birmingham)**

9:00am Lisa Barsotti (MIT)

Expected evolution of advanced LIGO sensitivity

9:45am Duncan Brown (Syracuse)

International gravitational wave projects.

10:30am

Morning Break & POSTERS

11:00am Pablo Marchant (Northwestern)

BH-BH mergers from rotational mixing in tight binaries

11:30am Tassos Fragos (Geneva)

What we know about BH spins & masses from BH X-ray binaries

12:00pm Ben Farr (KICP, Chicago)

With what accuracy can LIGO obtain spins and angles?

12:30pm

Lunch Break**Open Questions & Physical Processes in Massive Stars, Chair: Edward van den Heuvel (U of Amsterdam)**

2:00pm Norbert Langer (Bonn)

The CSM of massive stars at core collapse

2:45pm Conny Aerts (KU Leuven)

A data-driven outlook for the future of massive star research

CONFERENCE END3:45pm **SHUTTLE TO BWSCI*Also available to SB Airport and SB Airbus, Goleta location. (See Registration Desk** before Friday** to sign up.)**