Kilonova:
Multimessenger and Multiphysics

774. WE-Heraeus-Seminar

28 November – 01 December 2022

hybrid

at the Physikzentrum Bad Honnef, Germany

WILHELM UND ELSE
HERAEUS-STIFTUNG

Program

Sunday, 27 November 2022

17:00 – 20:00	Registration	
18:00	*BUFFET SUPPER and informal get-together*	

Monday, 28 November 2022

08:00	*BREAKFAST*	
09:00	Scientific organizers	**Welcome words**
09:10 – 09:55	Masaru Shibata	**Modeling neutron-star mergers by long-term numerical relativity simulation**
09:55 – 10:40	Jonah Miller	**Impact of neutrinos in post-merger accretion flows**
10:40 – 11:10	*COFFEE BREAK*	
11:10 – 11:55	Stephan Rosswog	**Neutron star merger simulations with the Lagrangian numerical relativity code SPHINCS_BSSN**
11:55 – 12:20	Anna Neuweiler	**Long-term simulations of dynamical ejecta: Homologous expansion and ilonova properties**
12:20 – 12:45	Maximilian Jacobi	**Nuclear matter properties in neutron star mergers**
12:45	*LUNCH*	

Program

Monday, 28 November 2022

14:00 – 14:45	Nicole Vassh	**r process in neutron star mergers and the impact of nuclear physics uncertainties**
14:45 – 15:30	Gabriel Martinez-Pinedo	**3D radiative transfer kilonova modelling with detailed nuclear and atomic input**
15:30 – 16:00	*COFFEE BREAK*	
16:00 – 16:45	Ann-Cecile Larsen	**Experiments for the *r* process**
16:45 – 17:30	Oliver Just	**R-process conditions and neutrino flavor mixing in neutrino-cooled accretion disks**
17:30 – 17:45	Stefan Jorda	**About the WE-Heraeus-Foundation**
17:45 – 18:30	**Discussion: Simulations and nucleosynthesis** with Rodrigo Fernandez and Nicole Vassh	
18:30	*DINNER*	

Program

Tuesday, 29 November 2022

08:00	*BREAKFAST*	
09:00 – 09:25	Giulia Stratta	**A comparison between short GRB optical counterparts and kilonova AT2017gfo**
09:25 – 09:50	Sho Fujibayashi	**Mass ejeciton and nucleosynthesis in binary neutron star mergers leaving short-lived massive neutron stars**
09:50 – 10:35	Masaomi Tanaka	**Radiative transfer simulations for kilonovae**
10:35 – 11:00	*COFFEE BREAK*	
11:00 – 11:25	Vsevolod Nedora	**Modeling kilonova afterglows: Effects of the thermal electron population and interaction with GRB outflows**
11:25 – 11:50	Nina Kunert	**Model selection of GRB 211211A through multi-wavelength analyses**
11:50 – 12:15	Brendan O'Connor	**The locations and environments of short GRBs**
12:15 – 12:40	Nanae Domoto	**Signatures of heavy elements in near-infrared spectra of kilonova**
12:40 – 12:50	**Conference Photo** (in the front of the lecture hall)	
12:50	*LUNCH*	

Program

Tuesday, 29 November 2022

14:00 – 14:45	Daiji Kato	**NIFS database for non-equilibrium plasmas and Japan-Lithuania opacity database for kilonovae**
14:45 – 15:30	**Poster flash**	
15:30 – 16:00	*COFFEE BREAK*	
16:00 – 17:30	**Poster session**	
17:30 – 18:30	**Discussion: Kilonova models and observations** with Eleonora Troja and Eli Waxman	
18:30	*DINNER*	

Program

Wednesday, 30 November 2022

08:00	*BREAKFAST*	
09:00 – 09:45	Henrik Hartman	**Experimental atomic radiative data for kilonova spectroscopy**
09:45 – 10:30	Stephan Fritzsche	**An atomic approach to the opacity of open d- and f-shell elements**
10:30 – 11:00	*COFFEE BREAK*	
11:00 – 11:45	Sonja Bernitt	**X-ray astrophysics in the laboratory**
11:45 – 12:10	Khwaish Kumar Anjum	**Laser-microwave double-resonance spectroscopy to perform g-factor measurements of heavy, highly charged ions at ARTEMIS in HITRAP**
12:10 – 12:35	Ricardo Ferreira da Silva	**Calculation of atomic inputs of r-process elements for kilonova modelling**
12:35	*LUNCH*	

Program

Wednesday, 30 November 2022

14:00 – 14:45	Stefan Schippers	**Laboratory astrophysics with storage rings and synchrotron light sources**
14:45 – 15:30	Darach Watson	**Element identification in, and geometry of, the kilonova AT2017gfo associated with GW170817**
15:30 – 16:00	*COFFEE BREAK*	
16:00 – 16:45	V. Ashley Villar *(online)*	**Kilonova observations enabled by the Vera C. Rubin Observatory**
16:45 – 17:30	Asa Skúladóttir	**Two sources of the r-process: quick and delayed**
17:30 – 18:30	**Discussion:** **Atomic physics for kilonova models and experiments** with James Gillanders and Yuri Litivnov	
18:30	*DINNER HERAEUS DINNER* *(social event with cold & warm buffet with complimentary drinks)*	

Program

Thursday, 01 December 2022

08:00	*BREAKFAST*	
09:00 – 09:45	Anne Noer Kolborg	**R-process mixing in the early Universe**
09:45 – 10:10	Quentin Pognan	**NLTE spectra of kilonovae**
10:10 – 10:35	Smaranika Banerjee	**Early kilonova from neutron star merger**
10:35 – 11:00	*COFFEE BREAK*	
11:00 – 11:45	Imre Bartos	**Near-future multi-messenger observations of kilonovae**
11:45 – 12:30	Tim Dietrich	**Multi-messenger astrophysics studies of merging neutron star**
12:30 – 12:40	Scientific organizers	**Closing words**
12:40	*LUNCH*	

End of the seminar and departure

NO DINNER for participants leaving on Friday; however, a self-service breakfast will be provided on Friday morning