

Session Program

8-11 Sept 2026

CoCoNuT Meeting 2026

Talks

University of Southampton, Building 56
Highfield, Southampton, SO17 1BJ, UK

Tuesday 8 September

11:00

Talks: Morning session 1

Session | **Location:** University of Southampton, Building 56, Highfield, Southampton, SO17 1BJ, UK | **Convener:** Katy Clough

11:00–12:00

Subgrid Modelling for Relativistic Magnetohydrodynamics with Machine Learning

Speaker

William Cook

12:00–12:30

Action filtering and relativistic turbulence

Speaker

Prof. Ian Hawke

12:30

14:00

Talks: Afternoon session 1

Session | **Location:** University of Southampton, Building 56, Highfield, Southampton, SO17 1BJ, UK | **Convener:** Miquel Miravet Tenés

14:00–15:00

Machine Learning applications outside of numerical relativity

Speaker

Dr Gregory Ashton

15:00–15:30

An autoencoder-based surrogate waveform model for quasi-circular binary-black-hole mergers

Speaker

Mr Anastasios Theodoropoulos

15:30–16:00

DANSurHM: Modularly incorporating higher modes in a deep learning based gravitational wave surrogate

Speaker

Osvaldo Gramaxo Freitas

16:00

16:30

Talks: Afternoon session 2

Session | **Location:** University of Southampton, Building 56, Highfield, Southampton, SO17 1BJ, UK | **Convener:** Eugene Lim

16:30–17:00

Physics-Informed Machine Learning for Black Hole Initial Data

Speakers

Irene Pitsiladi, Martin Zinzen

17:00–17:30

PINNs methods for the study of the magnetosphere of compact objects

Speaker

Matteo Stockinger

17:30

Wednesday 9 September

10:00

Talks: Morning session 1

Session | **Location:** University of Southampton, Building 56, Highfield, Southampton, SO17 1BJ, UK | **Convener:** Nils Andersson

10:00–10:20

3D MHD core-collapse progenitors: Rotation, magnetic-field amplification, and magnetic topology

Speaker

Adam Griffiths

10:20–10:40

Simulations of MHD Core-Collapse Supernova Explosions

Speaker

Jennifer Quinlan

10:40

11:10

Talks: Morning session 2

Session | **Location:** University of Southampton, Building 56, Highfield, Southampton, SO17 1BJ, UK | **Convener:** Suprovo Ghosh

11:10–11:30

Impact of the Si/O interface on supernovae explosions

Speaker

Nicolas Houry

11:30–11:50

The role of magnetic fields in neutrino-driven core-collapse supernovae

Speaker

Vishnu Varma

11:50–12:10

Deciphering the nature of proto-neutron star oscillation modes

Speaker

Dimitra Tseneklidou

12:10–12:30

Classification of proto-neutron star oscillation modes

Speaker

Guillem Fernández -Rodríguez

12:30

14:30

Talks: Afternoon session 1

Session | **Location:** University of Southampton, Building 56, Highfield, Southampton, SO17 1BJ, UK | **Convener:** Micaela Oertel

14:30–14:50

Inferring the progenitor properties from the gravitational waves and neutrino signals of a CCSN

Speaker

Thierry Foglizzo

14:50–15:10

Impact of the equation of state on the evolution of rapidly rotating core collapse supernovae

	Speaker Marco Cusinato
15:30	15:10–15:30 The Power Gap in Two Dimensions Speaker Haakon Andresen
16:00 17:20	Talks: Afternoon session 2 Session Location: University of Southampton, Building 56, Highfield, Southampton, SO17 1BJ, UK Convener: Prof. Alejandro Torres Forne 16:00–16:20 Multimessenger analysis of Core Collapse Standing Accretion Shock Instability Speaker Alphonse MOREAU 16:20–16:40 Taylor-Spruit dynamo in protoneutron stars spun-up by fallback Speaker Jerome Guilet 16:40–17:00 Large Pm small-scale kinematic dynamo in protoneutron stars Speaker Raphaël Raynaud

Thursday 10 September

10:00

Talks: Morning session 1

Session | **Location:** University of Southampton, Building 56, Highfield, Southampton, SO17 1BJ, UK | **Convener:** Miquel Miravet Tenés

10:00–10:20

Binary neutron star merger simulations with realistic neutrino interaction rates

Speaker

Ramon Jaeger

10:20–10:40

Weak Interaction Rates in Mergers: The Nucleon Width Approximation and Applications to Magnetized Neutron Stars

Speaker

Alexander Haber

10:40

11:10

Talks: Morning session 2

Session | **Location:** University of Southampton, Building 56, Highfield, Southampton, SO17 1BJ, UK | **Convener:** Alexander Haber

11:10–11:30

Eccentric low-mass black hole-neutron star mergers

Speaker

Ivan Markin

11:30–11:50

Black hole-neutron star mergers on GPU-accelerated codes

Speaker

Oliver Steppohn

11:50–12:10

The stabilizing role of the crust on the interior magnetic field in isolated neutron stars

Speaker

Fabrizio Venturi Piñas

12:10–12:30

Towards Binary Neutron Star Mergers Using High-Order Central WENO Finite Difference Schemes

Speaker

Stefano Muzzolon

12:30

14:30

Talks: Afternoon session 1

Session | **Location:** University of Southampton, Building 56, Highfield, Southampton, SO17 1BJ, UK | **Convener:** Jerome Novak

14:30–14:50

Convexity of equations of state in BNSs merger simulations and gravitational wave

Speaker

Giuseppe Riveccio

15:30

16:00

17:00

14:50–15:10

Unlocking neutron-star interiors with tidal resonances

Speaker

Fabian Gittins

15:10–15:30

Nuclear parameter inference in the context of high precision detections of Neutron Stars

Speaker

Lami Shetu Suleiman

Talks: Afternoon session 2

Session | **Location:** University of Southampton, Building 56, Highfield, Southampton, SO17 1BJ, UK | **Convener:** William Cook

16:00–16:20

Magnetic field configurations and jet-launching conditions in binary neutron star mergers

Speaker

Thomas Celora

16:20–16:40

Small-scale and mean-field dynamics in accretion disks around rapidly rotating neutron stars

Speaker

Michael Müller

16:40–17:00

Numerical simulations of neutron star oscillations with thermal effects

Speaker

Jerome Novak

Friday 11 September

10:00

Talks: Morning session 1

Session | **Location:** University of Southampton, Building 56, Highfield, Southampton, SO17 1BJ, UK | **Convener:** Pablo Cerdá-Durán

10:00–10:20

When Force-Free MHD Breaks Down: Dissipation and Emission in Extreme Magnetospheres

Speaker

Jens Mahlmann

10:40

10:20–10:40

Building and Breaking Magnetar Fields: A 3D GRMHD Study

Speaker

Raj Kishor Joshi

11:10

Talks: Morning session 2

Session | **Location:** University of Southampton, Building 56, Highfield, Southampton, SO17 1BJ, UK | **Convener:** Ian Hawke

11:10–11:30

Dark Matter in Neutron Stars: Imprints on Stellar Structure and Gravitational Waves

Speaker

Dr Violetta Sagun

11:30–11:50

Constraining Dark Matter in Neutron Stars with Next-Generation Gravitational-Wave Detectors

Speaker

Afonso Ávila

11:50–12:10

Modelling viscous effects in neutron stars using the BDNK framework

Speaker

Lik Hang Harry Shum

12:10–12:30

Magnetic Evolution in Superconducting Neutron Star Cores

Speaker

Nicolas Moraga

12:30

14:30

Talks: Afternoon session 1

Session | **Location:** University of Southampton, Building 56, Highfield, Southampton, SO17 1BJ, UK | **Convener:** Isabel Cordero-Carrión

14:30–14:50

A Simple High-Order Method for Accurate Magnetic Field Evolution

Speaker

Rahime Matur

14:50–15:10

Forming extremally charged black holes with a null coordinates code

Speaker

Laetitia Martel

15:10–15:30

The influence of magnetic field geometry and stratification on neutron star magnetic stability

Speaker

Ms Marta Piscitelli

15:30–15:50

Investigating field burial by magnetically confined accretion mounds on neutron stars

Speaker

Saurabh Yeole

15:50