



IAU SYMPOSIUM 363

Neutron Star Astrophysics at the Crossroads:
Magnetars and the Multimessenger Revolution

November 29th – December 3rd 2021

POST MEETING REPORT FORM

FINAL SCIENTIFIC PROGRAMME, LIST OF INVITED REVIEW SPEAKERS AND SESSION CHAIRS

Final scientific Programme

Monday - Plenary

9.00-10.00

- Dr Irina Dvorkin, Institut d'Astrophysique de Paris (invited)
Rates and Environments of Neutron Star Binaries
- Dr Paolo Esposito, School for Advanced Studies IUSS Pavia (invited)
Magnetar manifestations at large

10.00-10.30 Coffee break

10.30-12.30

- Prof Michael Kramer, Max-Planck-Institut fuer Radioastronomie (invited)
Fast Radio Bursts: neutron stars, magnetars or something else?
- Dr Alice Borghese, Institut de Ciències del l'Espai (IEEC-CSIC) (invited)
Exploring the Neutron Star Zoo
- Dr Natasha Hurley-Walker, International Centre For Radio Astronomy Research / Curtin University
An ultra-long period magnetar with periodic radio emission
- Prof Benjamin Stappers, University of Manchester
A potential ultra-long period magnetar discovered with MeerKAT
- Prof Samar Safi-Harb, University of Manitoba
Zooming in on highly magnetized neutron stars - lessons learnt from PSR J1119-6127 and its environment

12:30-13:00 Poster presentation

Monday - Parallel Gravitational Wave Neutron Star Astrophysics

14.30-16.00

- Prof Paola Leaci, Sapienza University and Rome INFN (invited)
The search for Continuous Gravitational Waves: the journey to discovery
- Dr Niccolò Bucciantini, Inaf - Osservatorio Di Arcetri
Modeling the deformability of magnetized NSs in the light of future Continuous Gravitational Waves detection
- Dr Fabian Gittins, University of Southampton
Making (neutron-star) mountains out of molehills
- Ms Christine Ye, Eastlake High School/Northwestern CIERA
Measuring the lower mass gap and neutron star maximum mass in spinning NSBH binaries

16.00-17.00 Coffee break

17.00-18.20

- Dr Dorota Rosinska, University of Warsaw
On the maximum mass of differentially rotating neutron stars and strange quark stars
- Ms Eleonora Loffredo, Gran Sasso Science Institute / INFN
Muons production and Neutrino trapping in Binary Neutron Star Mergers
- Mr Oliver Eggenberger Andersen, Department of Astronomy, Stockholm University
Equation of State Dependence of Gravitational Waves in Core-Collapse Supernovae
- Dr Samuel Witte, Grappa, University Of Amsterdam
Probing exotic particles with neutron star magnetospheres

Monday - Parallel Magnetars

14.30-16.00

- Dr Konstantinos Gourgouliatos, University Of Patras (invited)
Magnetic Field Evolution in the Crust of Neutron Stars: Crust Failure and Plastic Flow
- Dr Alexis Reboul-Salze, Max Planck Institute for Gravitational Physics
The magnetorotational instability in proto-neutron stars
- Dr Raphaël Raynaud, Université de Paris - CEA
Gravitational wave signature of magnetar formation
- Dr Matteo Bugli, Cea - Saclay
Magnetorotational core-collapse supernovae: the impact of the magnetic field's structure

16.00-17.00 Coffee break

17.00-18.00

- Mr Davide De Grandis, University of Padova
Modelling Magnetar Behaviour with 3D Magneto-thermal Simulations
- Ms Clara Dehman, CSIC - IEEC (ICE)
The Influence of Crustal Physics in The Cooling of a Neutron Star
- Mr Nicolas Moraga, Universidad de Chile
Magneto-thermal evolution of neutron star cores in the "strong" and "weak-coupling regimes"

Tuesday - Plenary

9.00 - 10.00

- Dr. Patricia Schmidt, University of Birmingham (invited)
Neutron Star Modelling in light of Gravitational Wave Observations
- Prof Linqing Wen, The University Of Western Australia (invited)
Gravitational Wave Early Warning and Multi-wavelength Observation of Binary Coalescences

10.00-10.30 Coffee break

10:30 -12:30

- Prof Binbin Zhang, Nanjing University
A Peculiarly Short-duration Gamma-Ray Burst from Massive Star Core Collapse
- Dr Manuel Arca Sedda, Astronomisches Rechen Institut (univ. Of Heidelberg)
Dynamical formation of NS-BH mergers: hints on the origin of GW190814, GW190426, GW200105, and GW200115
- Dr Barbara Patricelli, European Gravitational Observatory
Can we constrain the aftermath of binary neutron star mergers with short gamma-ray bursts?
- Dr Valeriya Korol, University of Birmingham
Prospects for studying Galactic neutron stars in binaries with LISA
- Dr Sandro Mereghetti, INAF, IASF-Milano
The contribution of the INTEGRAL satellite to magnetars and multimessenger astrophysics
- Dr Pantelis Pnigouras, Sapienza University of Rome
Inferring the dense nuclear matter equation of state with neutron star tides

12:30-13:00 Poster presentation

Tuesday - Parallel Gravitational Wave Neutron Star Astrophysics

14.30-16.00

- Dr Masaomi Tanaka, Tohoku University (invited)

Modeling kilonova emission from neutron star mergers

- Dr Andrea Rossi, INAF-OAS Bologna
Kilonova emission observed so far
- Prof Myungshin Im, Seoul National University
Gravitational-wave EM Counterpart Korean Observatory (GECKO)
- Ms Smaranika Banerjee, Tohoku University
Simulations of early kilonova emission from neutron star mergers

16.00-17.00 Coffee Break

17.00-18.00

- Dr Mattia Bulla, Stockholm University
Let there be light: Illuminating kilonovae with the radiative transfer code POSSIS
- Dr Igor Andreoni, Joint Space Science Institute
Neutron star mergers during LIGO/Virgo O3: follow-up with DECAM and ZTF
- Mr Lorenzo Nativi, Stockholm University
Consequences of Jet-Ejecta Interaction in Neutron Star Mergers

Tuesday - Parallel Magnetars

14.30-15.50

- Mr Ziteng Wang, The University of Sydney
Discovery of a Highly-Polarized Transient Point Source with the Australian SKA Pathfinder
- Mr Hao Ding, Swinburne University of Technology
VLBA Astrometry of the Fastest-spinning Magnetar Swift J1818.0-1607
- Dr Conor Omand, Stockholm University
Radio Emission from Embryonic Superluminous Supernova Remnants Powered by Millisecond Magnetars
- Dr Bettina Posselt, University of Oxford
A new perspective on the radio properties of the non-recycled pulsar population

15.50-16.50 Coffee Break

16.50-18.00

- Dr Alice Harding, Los Alamos National Laboratory (invited)
Physics in Ultra-Strong Magnetic Fields
- Mr Kun Hu, Rice University
Polarized Radiation Signals from Highly Magnetized Neutron Star Surfaces
- Mr Akshay Suresh, Cornell University
4–8 GHz Emission of the Galactic Center Magnetar PSR J1745-2900

Wednesday - Plenary

9.00-10.00

- Prof Jeremy Heyl, University of British Columbia (invited)
Polarization signatures in magnetars
- Dr Paolo D'Avanzo, INAF - Osservatorio Astronomico di Brera (invited)
Kilonova observations in the multi-messenger era

10.00-10.30 Coffee break

10.30-12.30

- Dr Andrea Possenti, Inaf-Osservatorio Astronomico Di Cagliari (invited)
Magnetars and Radiopulsars
- Prof Masaru Shibata, Max Planck Institute for Gravitational Physics (invited)
Merger of binary neutron stars: electromagnetic signals and nucleosynthesis
- Ms Nanae Domoto, Tohoku University
The Signatures of r-process Elements in Kilonova Spectra
- Dr Sam Lander, University Of East Anglia
The game of life on a magnetar crust: bursts to giant flares
- Dr Francesco Coti Zelati, Institute of Space Sciences (ICE, CSIC)
The new magnetar SGR 1830-0645 in outburst

12:30-13:00 Poster presentation

Wednesday - Parallel Gravitational Wave Neutron Star Astrophysics

14.20-16.00

- Mr Clément Pellouin, Institut d'Astrophysique de Paris, Sorbonne Université
Refined analysis of GW170817's off-axis afterglow observation and flux predictions at higher energies
- Dr Antonios Nathanail, University of Athens
Outflows from neutron-star mergers: the case of GW170817/GRB170817A
- Ms Aprajita Hajela, Northwestern University
A new source of X-rays in GW170817 3.4 years after the merger
- Ms Giulia Gianfagna, Inaf-laps
The neutron star-neutron star merger GW170817: a multi-messenger study
- Mr Gerardo Urrutia, Instituto De Ciencias Nucleares, Unam
What determines the structure of short gamma-ray burst jets?

16.00-17.00 Coffee break

17.00-18.00

- Dr Ariadna Murguia-Berthier, CIERA, Northwestern University
Implementing a tabulated EOS and neutrino leakage scheme in HARM3D
- Dr Emanuele Greco, Anton Pannekoek Instituut, University of Amsterdam
Non thermal emission from a Pulsar Wind Nebula in SN 1987A
- Dr Federico Lopez Armengol, Rochester Institute of Technology
Advancing Computational Methods to Understand the Dynamics of Ejection, Accretion, Winds, and Jets in Binary Neutron Star Mergers

Wednesday - Parallel Magnetars

14.20-16.00

- Dr Lin Lin, Beijing Normal University
The Insight/HXMT Observations of Magnetar Short Bursts
- Prof Kazuo Makishima, Kavli IPMU, the University of Tokyo
Novel clues to the physics of magnetars as probed through detailed pulse-timing studies
- Ms Alena Khokhriakova, Lomonosov Moscow State University
Observability of isolated neutron stars at SRG/eROSITA
- Dr Kaustubh Rajwade, University of Manchester
Studying the radio and X-ray evolution of Swift J1818.0-1607
- Dr Michela Rigoselli, INAF-IASF Milano
Pulsed thermal X-rays from highly-magnetized isolated neutron stars

16.00-17.00 Coffee break

17.00-18.00

- Ms Rachael Stewart, George Washington University
Detailed phase-resolved spectral and temporal study of the bright persistently emitting magnetar 1RXS J170849.0-400910
- Dr Kuo Liu, Max-Planck-Institute for Radioastronomy
Spectral and magnetospheric evolution of the newly discovered radio-active magnetar Swift J1818.0-1607
- Ms Demet Kirmizibayrak, University of British Columbia
Probing magnetars using spectral lines with future telescopes

Thursday - Parallel Gravitational Wave Neutron Star Astrophysics

9:30 - 10:30

- Dr Roberto Ricci - Inrim
Searching for the radio remnants of short duration gamma-ray bursts
- Mr James Leung - University Of Sydney
Searches for GRB radio afterglows with ASKAP
- Ms Lauren Rhodes - University Of Oxford
Radio emission from very high energy gamma-ray bursts

10:30 - 11:00 Coffee break

11:00 - 12:30

- Dr Christina Thoene - IAA, CSIC (invited)
The environment of NS mergers and short GRB hosts
- Mr Brendan O'Connor - University of Maryland, College Park
A search for hostless short GRBs with large aperture telescopes
- Dr Maria Celeste Artale - University of Innsbruck
Modeling the host galaxies of binary compact objects across cosmic time
- Mr Sumeet Kulkarni - University Of Mississippi
Recoil velocity of binary neutron star merger remnants

Thursday - Parallel Magnetars

9:30 - 11:00

- Prof Sergei Popov - Sternberg Astronomical Institute, Lomonosov Moscow State University (invited)
High magnetic field NSs in binary systems
- Dr Ashley Chrimes - Radboud University
Where are the magnetar binaries?
- Mr Nabil Brice - MSSL
Pulsating Ultra-Luminous X-ray Sources as Accreting Magnetars
- Dr Matteo Bachetti - INAF, Osservatorio Astronomico Di Cagliari
Measuring the mass exchange in the pulsating ultraluminous x-ray source M82 X-2

11:00 - 11:30 Coffee break

11:30 - 12:30

- Mr Jay Vijay Kalinani - University of Padova
Magnetars born in binary neutron star mergers, short gamma-ray bursts, & kilonovae
- Ms Yuliya Mutafchieva - Institute For Nuclear Research And Nuclear Energy, Bulgarian Academy Of Sciences
Unified equation of state and composition of magnetar crusts
- Prof Nicolas Chamel - Université Libre De Bruxelles
Heating in magnetar crusts from electron captures

Thursday - Plenary

14:00 - 15:00

- Dr Hendrik Van Eerten - University Of Bath (invited)
GRB 170817A and the long-term aftermath of neutron star mergers
- Dr Alessandra Corsi - TTU (invited)
Observations of gravitational-wave afterglows

15:00 - 15:30 Coffee break

15:30 - 18:00

- Prof Bogdanov Slavko - Columbia University (invited)
NICER Results and the Neutron Star Equation of State
- Dr Chris Fryer - Los Alamos National Laboratory (invited)
Compact Remnant Mass Constraints on the Supernova Engine
- Dr Michela Negro - CRESST II - NASA-GSFC/UMBC
Identification of a Local Sample of Gamma-Ray Bursts Consistent with a Magnetar Giant Flare Origin
- Dr Simone Dichiara - University Of Maryland/NASA GSFC/PennState University
Evidence of extended emission in high-redshift short GRBs
- Mr Tomas Ahumada - University of Maryland
Discovery and confirmation of the shortest gamma-ray burst from a collapsar
- Dr Luigi Piro -INAF/IAPS (invited)
Multi-messenger science with Athena and Future Multi-messenger Observatories

Friday - Plenary

9:00 - 9:30 Poster presentation

9:30 - 10:00

- Felix Aharonian, MPIK Heidelberg (invited)
Perspectives of the ground-based gamma-ray observations of gamma-ray bursts in the context of GRB-GW links

10:00 - 10:30 Coffee break

10:30 - 12:30

- Dr. Immacolata Donnarumma, Italian Space Agency (invited)
NS Astrophysics with Future Observatories
- Prof Bangalore Sathyaprakash, Pennsylvania State University (invited)
Unveiling the Universe with the Next Generation of Gravitational-Wave Detectors
- Dr Adriana Mancini Pires, Leibniz Institute For Astrophysics Potsdam
eROSITA observations of four of the magnificent seven isolated neutron stars
- Dr Roberto Taverna, Università degli Studi di Padova
X-ray spectra and polarization from magnetar candidates

- Dr Costantino Pacilio, Sapienza University of Rome
Ranking the Love for the neutron star equation of state: the need for third-generation detectors

12:30 - 13:00 Poster presentation

Friday - Parallel Gravitational Wave Neutron Star Astrophysics

14:30 - 16:00

- Mr. Geert Raaijmakers, University of Amsterdam (invited)
Unraveling neutron star interiors with multimessenger observables
- Dr Lorenzo Amati, INAF-OAS Bologna
Multi-messenger astrophysics and cosmology with Gamma-Ray Bursts
- Mr Samuele Ronchini, Gran Sasso Science Institute
High-energy counterparts of compact binary mergers detected with the Einstein Telescope
- Dr Nikhil Sarin, Nordita Institute
The multi-messenger signatures of binary neutron star merger remnants

16:00 - 17:00 Coffee break

17:00 - 18:00

- Mr Andrea Sabatucci, Università La Sapienza di Roma
Constraining three-nucleon forces with multimessenger data
- Dr Iosif Panagiotis, Aristotle University of Thessaloniki
Delving into binary neutron star merger remnants with equilibrium models
- Ms Kara Merfeld, University of Oregon
Search for Gravitational Wave Transients associated with Magnetar bursts during the third Advanced LIGO and Advanced Virgo observing run

Friday - Parallel Magnetars

14:30 - 16:10

- Dr Daniele Viganò, Institute of Space Sciences, CSIC (invited)
Neutron stars magnetic fields and magnetar magnetospheres
- Prof Ersin Gogus, Sabanci University (invited)
Magnetars in action
- Mr Petros Stefanou, University of Valencia
Modeling 3D Force-Free Neutron Star Magnetospheres
- Dr Zorawar Wadiasingh, Nasa Gsfc, Usra, University of Maryland
Resonant Compton Scattering, Photon Splitting and other Sundries in Magnetar Magnetospheres

16:10 - 17:00 Coffee break

17.00-18.00

- Dr Denis Gonzalez-Caniulef, University of British Columbia
IXPE simulations for magnetars
- Prof Andreas Reisenegger, Universidad Metropolitana de Ciencias de la Educación
Stable stratification and magnetic equilibria in neutron star cores
- Dr Andrei Igoshev, University of Leeds
Magnetic fields shape observational manifestations of neutron stars

List of invited review speakers

Plenary Session

1. Irina Dvorkin - Institut d'Astrophysique de Paris
2. Paolo Esposito - University School for Advanced Studies IUSS Pavia
3. Michael Kramer - Max-Planck-Institut fuer Radioastronomie
4. Alice Borghese - Institut de Ciències de L'Espai (IEEC-CSIC)
5. Patricia Schmidt - University of Birmingham
6. Linqing Wen - The University of Western Australia
7. Jeremy Heyl - The University of British Columbia
8. Paolo D'Avanzo - INAF-Osservatorio Astronomico di Brera
9. Andrea Possenti - INAF-Osservatorio Astronomico Di Cagliari
10. Masaru Shibata - Max Planck Institute for Gravitational Physics
11. Hendrik Van Eerten - University of Bath
12. Alessandra Corsi - TTU
13. Bogdanov Slavko - Columbia University
14. Chris Fryer - Los Alamos National Laboratory
15. Luigi Piro - INAF-IAPS Roma
16. Felix Aharonian - MPIK Heidelberg
17. Immacolata Donnarumma - Italian Space Agency
18. Bangalore Sathyaprakash - Pennsylvania State University

Parallel Session Magnetars

1. Konstantinos Gourgouliatos - University of Patras
2. Alice Harding - Los Alamos National Laboratory
3. Sergei Popov - Sternberg Astronomical Institute, Lomonosov Moscow State University
4. Daniele Viganò - Institute of Space Sciences, CSIC
5. Ersin Gogus - Sabanci University

Parallel Session Gravitational-wave neutron star astrophysics

1. Paola Leaci - Sapienza University and Rome INFN
2. Masaomi Tanaka - Tohoku University
3. Christina Thoene - IAA-CSIC
4. Geert Raaijmakers - University of Amsterdam

Among 27 invited speakers, 9 were female and 18 male.
There were 83 contributed talks, among which 25 were given by female speakers and 58 by male.

List of Session Chairs

Plenary Sessions

1. Nanda Rea - Institute of Space Sciences, CSIC
2. Sandro Mereghetti - INAF-IASF Milano
3. Pia Astone - INFN
4. Frédéric Daigne - CNRS, Institut d'Astrophysique de Paris
5. Tara Murphy - University of Sydney
6. Silvia Zane - MSSL, University College London
7. David Berge - DESY
8. Marica Branchesi - Gran Sasso Science Institute
9. Gor Oganessian - Gran Sasso Science Institute
10. Gian Luca Israel - INAF-OAR Roma

Parallel Session Magnetars

1. Daniele Viganò - Institute of Space Sciences (CSIC)
2. Niccolò Bucciantini - INAF-Osservatorio di Arcetri
3. Andrea Possenti - INAF-Osservatorio Astronomico di Cagliari
4. Andreas Reisenegger - Universidad Metropolitana de Ciencias de La Educación
5. Ersin Gogus - Sabanci University
6. Samar Safi-Harb - University of Manitoba
7. Lin Lin - Beijing Normal University
8. Dmitry Yakovlev - Ioffe Institute
9. Konstantinos Gourgouliatos - University of Patras
10. Roberto Turolla - Università degli Studi di Padova

Parallel Session Gravitational-wave neutron star astrophysics

1. Peter Shawhan - University of Maryland
2. Andrea Maselli - Gran Sasso Science Institute
3. Giulia Stratta - INAF
4. Stefano Ascenzi - Institute of Space Sciences, CSIC
5. Om Sharan Salafia - INAF-Osservatorio Astronomico Di Brera
6. Marica Branchesi - Gran Sasso Science Institute/INFN
7. Poonam Chandra - National Centre For Radio Astrophysics
8. Ashley Chrimes - Radboud University
9. Stephan Rosswog - Stockholm University
10. Gabriele Bruni - INAF-IAPS Roma

Among 30 sessions, 10 were chaired by females and 20 by males.

SUMMARY OF THE SCIENTIFIC HIGHLIGHTS OF THE MEETING

Neutron stars are the strongest magnets known in the Universe. With central densities 5-10 times larger than the nuclear density and huge magnetic fields, in the TeraGauss range and above, neutron stars and their extreme manifestations, known as magnetars, provide unique laboratories to probe the properties of matter under conditions that can not be reproduced in ground-based experiments, or met in any other astrophysical environments. Magnetars are the remnants of core-collapse supernovae and binary neutron star mergers, both detectable sources of gravitational waves (GWs) by Advanced LIGO, Virgo and KAGRA.

A new era in the study of neutron stars was ushered in by the ground-breaking discovery of GW170817, the first multi-messenger transient observed through GWs and light. Different messengers provided complementary views of the same source, enabling a leap forward in our knowledge of relativistic jets, cosmic nucleosynthesis, nuclear physics and cosmology. This nascent field is set to soon revolutionize the study of neutron stars, magnetars and their links to the most spectacular cosmic fireworks, such as giant flares, gamma-ray bursts, kilonovae and supernovae.

The symposium provided an interdisciplinary forum, timely bringing together astrophysicists, computational and nuclear physicists, gravitational wave researchers and others to discuss these new findings and lay down the open questions to be solved in the first decade of multi-messenger astrophysics. It presented the status, perspectives and challenges in the blossoming era of multi-messenger astronomy and it explored the many facets of magnetars, from theory to their most to extreme observational manifestations, cosmic fireworks, such as giant flares, gamma-ray bursts, kilonovae and supernovae. It included discussions on next generation facilities for multi-messenger astronomy and their associated science cases.

EXECUTIVE SUMMARY OF THE MEETING

The IAU symposium 363 was held from November 29th to December 3rd 2021 remotely, due to the ongoing travel restrictions imposed by the Covid-19 pandemics. The symposium was organized around a plenary session and two parallel sessions each day; in addition, 5 poster sessions 30m each were held, granting the authors a 2m slot for oral presentation. The focus of the parallel sessions was on magnetar astrophysics and neutron star astrophysics through gravitational waves observations, respectively; all sessions lasted 3h30m. The plenary sessions accommodated 18 invited talks plus 18 contributed talks, selected from those ranked

higher in the SOC evaluation. The magnetar and gravitational-wave parallels hosted 5 invited plus 33 contributed talks, and 4 invited plus 32 contributed talks, respectively.

Even if the symposium was organized remotely, all the talks were live. In order to make attendance easier for participants living in different time zones, the talks were recorded and the recordings made timely available on the Symposium platform.

Plenary sessions were designed to give a broad and interdisciplinary overview of neutron stars, their gravitational-waves and electromagnetic emission. They summarized the current state-of-the-art and highlighted the most recent advances in the field.

The two parallel sessions provided a deeper insight into specific questions on the physics of the magnetars on one side, and neutron stars as sources of gravitational waves, kilonovae and gamma-ray bursts on the other.

The topics of plenary session were

- Neutron Star Population and Environment
- Neutron Star and Magnetars as Sources of Gravitational Waves
- Neutron Star and Magnetar Emission Processes
- The Neutron Star and Gamma-ray Burst Connection
- Neutron Star Astrophysics with Future Observatories

The topics of the parallel Session Magnetars were

- Neutron stars population synthesis and links among diverse neutron star classes
- Magnetars: from their formation to present multiwavelength observations
- High magnetic field NS in binary systems
- Neutron stars magnetic fields and magnetar magnetospheres

The topics of the parallel Session Gravitational-wave neutron star astrophysics were

- Neutron stars through gravitational wave observations: modelling, search and implications in fundamental physics and astrophysics
- Binary neutron star mergers, Kilonovae and Gamma-Ray Bursts
- Binary neutron star population and environment through gravitational wave observations and host galaxy studies
- Neutron star physics and cosmology with new generation of multi-messenger instruments

The symposium saw the participation of 265 scientists from 34 countries, with a large participation of students and early career researchers.

More details can be found at the web-site <https://astrometing.gssi.it/>

Scientific organizing committee

Marica Branchesi (co-chair, GSSI/INFN, Italy)

Gian Luca Israel co-chair, Observatory of Rome, INAF, Italy)

Roberto Turolla (co-chair, University of Padova, Italy and University College London, UK)

Eleonora Troja (co-chair, University of Maryland and NASA Goddard Space Flight Center, USA)

Matthew Baring (Rice University, USA)

Laura Cadonati (Georgia Tech, USA)

Bala Iyer (International Centre for Theoretical Sciences, India)

Nobuyuki Kawai (Tokyo Institute of Technology, Japan)

Tara Murphy (Sydney Institute for Astronomy, Australia)

Rosalba Perna (Stonybrook University, USA)

Nanda Rea (Institute of Space Sciences, IEEC–CSIC, Spain)

Stephan Rosswog (Stockholm University, Sweden)

Samar Safi-Harb (University of Manitoba, Canada)

Dmitry Yakovlev (Ioffe Institute, Russian Federation)

Silvia Zane (University College London, UK)

Local Organizing Committee and administrative helps

Eliana Di Giovanni (GSSI)

Gor Oganessian (GSSI)

Andrea Maselli (GSSI)

Marica Branchesi (GSSI)

Gian Luca Israel (INAF, OAR)

Roberto Turolla (Università degli Studi di Padova)

Marco Agnello (Università degli Studi di Padova)

Silvia Zane (University College London)

Proceeding editors:

Matthew Baring (Rice University, USA)

Eleonora Troja (University of Maryland and NASA Goddard Space Flight Center)

We warmly thank IAU, Università degli Studi di Padova, Gran Sasso Science Institute, and AHEAD2020 for their support to the realization of the event. A special thank to the KUONI company for the professional organisation of the congress, all the KUONI team, Imma Roca and her collaborators, for their constant, invaluable help, support and good will round the clock.