

IAUS 331 : « SN 1987A, 30 years later »

Scientific Program



IAU Symposium 331



SN 1987A, 30 years later

Cosmic Rays and Nuclei from Supernovae and their aftermaths

FEBRUARY 20-24, 2017

Saint-Gilles, La Réunion Island, France

TOPICS:

Latest evolutionary stages of massive stars
Stellar progenitors and diversity in Supernovae
SN 1987A, thirty years later
Explosion mechanisms and nucleosynthesis
Particle acceleration and origin of cosmic rays
Multi-wavelength/multi-messenger data
Prospectives with future, post-2018, instruments

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« Academic » : black, IAU grantee : red, Invited : green

1) Massive Stars as SN progenitors: Observations of RSGs/BSGs/WRs and their surroundings – Stellar Evolution (mass loss, rotation, binarity, magnetic field, instabilities) [chair: R. Diehl]

Monday, 09:00 – 10:30 : 3×C, 1×I

Monday, 11:00 – 12:30 : 3×C, 1×I

- 1- The Progenitors of Core-Collapse Supernovae, **R. Hirschi**
- 2- Single versus binary star progenitors of Type IIb supernovae, **N. Sravan**
- 3- Evolution and explosions of stars leading to type IIP or IIb supernovae through MESA and SNEC, **S. Das & A. Ray**
- 4- The Type IIb Supernova 2016gkg and Its Remarkable Blue Progenitor **C. Kilpatrick**
- 5- CSI in Supernova Remnants, **Y.-H. Chu**
- 6- Unveiling the structure of the progenitors of type II-P Supernovae through multiwaveband observations, **F. Sutaria**
- 7- Outbursts of evolved massive stars: SN 2015bh and its relatives, **C. Thöne**
- 8- Fermi acceleration under control: eta Carinae, **R. Walter**

2) SN explosion mechanisms: theory and multi-dimensional simulations of neutrino-/non-neutrino-driven mechanisms [chair: T. Janka]

Monday, 14:00 – 15:30 : 3×C, 1×I

Monday, 16:00 – 17:50 : 4×C, 1×I

- 1- Observational Constraints on the Supernova Engine, **C. Fryer**
- 2- Hydrodynamic Simulations of Axisymmetric Supernovae Explosion, **N. Afsariardchi**
- 3- Linking 3D CCSN simulations with observations, **A. Wongwathanarat**
- 4- Three Dimensional Simulations of Core-Collapse Supernovae in FLASH, **E. O'Connor**
- 5- Explosion and Nucleosynthesis of Massive and Very Massive Stars, **A. Heger**
- 6- Jets in supernovae and SNRs, **N. Soker**
- 7- Magnetically assisted explosions of weakly magnetized stars, **H. Sawai**
- 8- Incidence of stellar rotation on the explosion mechanism of massive stars, **R. Kazeroni**
- 9- How to form a millisecond magnetar ? Magnetic field amplification in protoneutron stars, **J. Guilet**

3) SNe as stellar explosive outcomes: SN properties - SN-GRB connection [chair: A. Ray]

Tuesday, 09:00 – 10:30 : 3×C, 1×I

Tuesday, 11:00 – 12:30 : 3×C, 1×I

- 1- Constraints on the progenitors from radio and X-ray observations of core collapse supernovae, **P. Chandra**
- 2- Constraining magnetic field amplification in SN shocks using radio observations of SNe 2011fe and 2014J, **E. Kundu**
- 3- Supernova 1986J: a Neutron Star or Black Hole in the Center?, **M. Bietenholz**
- 4- Spatial distribution of different subtypes of Core-Collapse and Thermonuclear Supernovae in the galaxies, **D. Tsvetkov**
- 5- Massive Stars explosions, **S. Valenti**
- 6- Properties of X-ray emission of an aspherical shock breakout, **Y. Ohtani**
- 7- The diversity of GRBs and their supernovae: GRB-SN, kilonovae and SN-less GRBs, **A. de Ugarte Postigo**
- 8- Radioactive decay of GRB-SNe at late-times, **K. Misra**

4) SN outcomes and impacts: SNRs : dynamics, ejecta, dust – Nucleosynthesis – Feedback on ISM [chair: M. Renaud]

Tuesday, 14:00 – 15:30 : 3×C, 1×I

Tuesday, 16:00 – 17:30 : 3×C, 1×I

Wednesday, 14:00 – 15:30 : 3×C, 1×I

Wednesday, 16:00 – 17:00 : 3×C

- 9- Constraining pulsar birth properties with supernova X-ray observations, **Y. Gallant**
- 10- The impact of reverberation on pulsars of low spin-down power: A rotationally-powered magnetar nebula around Swift 1834.9-0846, **D. F. Torres**
- 1- Supernova remnants dynamics, **A. Decourchelle**
- 2- The infancy of supernova remnants: evolving a supernova into its remnant in 3D, **M. Gabler**
- 3- Bridging the gap between SNe and their remnants through multi-dimensional hydrodynamic modeling, **S. Orlando**
- 4- MUSE Integral Field Observation of the Oxygen-rich SNR 1E0102, **I. Seitenzahl**
- 5- Ultraviolet Extinction of a Few Supernova Remnants, **M. Sun**
- 6- Detections of Thermal X-Ray Emission and Proper Motions in RX J1713.7-3946, **S. Katsuda** -----(end of the day)-----
- 7- High-resolution imaging of SNR IC443 and W44 with the Sardinia Radio Telescope at 7 GHz, **E. Egron**
- 8- Evidence for a wide electron spectra scatter among different SNR regions from high radio-frequencies observations, **A. Pellizzoni**
- 9- SNRs interacting with molecular clouds, a tracer of hadron acceleration at the SN shocks, **J. Supan**
- 10- 325 MHz and 610 MHz Radio Counterparts of SNR G353.6-0.7 a.k.a. HESS J1731-347, **Nayana, A.J.**
- 11- Bringing the High Energy Sky into Focus: NuSTAR's View of Supernova Remnants, **B. Grefenstette**
- 12- Gamma ray line measurements from supernova explosions, **R. Diehl**
- 13- 3D Supernova Explosion Models for the Production and Distribution of ⁴⁴Ti and ⁵⁶Ni in Cassiopeia A, **H.-T. Janka**
- 14- Discovery of Titanium-K Lines in the Northeastern Jet of Cas A, **T. Ikeda**

5) Poster session: [chair: M. Renaud]

Wednesday, 17:30 – 18:30 (11 3+2min talks)

- 1- Characterization of Supernova Remnants in M83, **C.-J. Li**
- 2- Multi-wavelength Characterization of Type Ia Supernova Remnants, **P.-S. Ou**
- ~~3- High quality sampling of SNRs in the radio band, **G. Castelletti**~~
- 4- High-resolution spectral imaging of Supernova Remnants IC443 and W44 at 22 GHz with the Sardinia Radio Telescope, **S. Loru**
- 5- Investigating the region of 3C397 in High Energy Gamma-rays, **P. Bhattacharjee**
- 6- Disentangling the hadronic from the leptonic emission in the composite SNR G326.3-1.8, **J. Devin**
- 7- Upper limits on gamma-ray emission from SNe serendipitously observed with H.E.S.S., **R. Simoni**
- 8- 3D dust radiative transfer simulations of SN1987A, **M. Baes**
- 9- Cosmic-Ray Lithium Production in the Nova Ejecta, **N. Kawanaka**
- 10- Measuring Distances to the Galactic Supernova Remnants Using Red Clump Stars, **S. Shan**
- 11- MHD Simulation of Supernova Remnants, **M. Zhang**
- 12- Supernova Remnants with Astrosat, **F. Sutaria**

6) Particle acceleration and Origin of Cosmic Rays: Diffusive Shock Acceleration Theory and 3D simulations — Magnetic field constraints — Review on CR measurements [chair: Y. Gallant]

Thursday, 09:00 – 10:40 : 2×C, 2×I

Thursday, 11:10 – 12:30 : 4×C

- 1- Cosmic ray astroparticle physics: current status and future perspectives, **F. Donato**
- 2- The SNR-CR connection: a modern prospective, **G. Morlino**
- 3- X-ray Synchrotron Polarization from Turbulent Plasmas in Supernova Remnants, **M. G. Baring**
- 4- Balmer-dominated shocks in Tycho's SNR: omnipresence of CRs, **S. Knezevic**
- 5- Spatio-temporal evolution of the nonresonant Bell's instability in the precursors of young supernova remnant shocks, **O. Kobzar**
- 6- Nonrelativistic perpendicular shocks modeling young supernova remnants through kinetic simulations, **J. Niemiec**
- 7- Turbulent magnetic reconnection and particle acceleration at nonrelativistic shocks of young supernova remnants, **A. Bohdan**
- 8- Linking SNe and SNRs. Time-dependent injection in SN 1987A and gamma-ray emission of IC 443, **O. Petruk**

7) SN 1987A, 30 years later: Historical review – Multi-wavelength properties of the remnant in connection with the above-listed sessions [chair: T. Janka]

Thursday, 14:00 – 15:30 : 3×C, 1×I

Thursday, 16:00 – 17:30 : 3×C, 1×I

Thursday, evening “Celebrating the SN 1987A 30th anniversary” : 2×I

- 1- SN 1987A at 30 years, **C. Fransson**
- 2- X-raying the evolution of SN 1987A, **V. Kashyap**
- 3- Investigating the origin of the X-ray emission from SN 1987A, **M. Miceli** → **S. Orlando**
- 4- ALMA observations of Molecules in Supernova 1987A, **M. Matsuura**
- 5- Particle accelerators in the Large Magellanic Cloud, **P. Martin**
- 6- H.E.S.S. Observations of the Large Magellanic Cloud, **N. Komin**
- 7- The Radio Remnant of Supernova 1987A - A Broader View, **G. Zanardo**
- 8- High-resolution observations of dust in SN1987A, **P. Cigan**
- 9- Supernova 1987A and the Birth of Neutrino Astronomy, **G. Raffelt**
- 10- SN 1987A: The Supernova of a Lifetime, **R. Kirshner**

8) Non-thermal multi-wavelength/multi-messenger data on SNe/SNRs: Radio/X-ray/GeV/TeV observations and broadband modeling — New windows : Gravitational Waves, Neutrinos — Future facilities & perspectives (Advanced LIGO/Virgo, KM3NeT, IceCube-Gen2, SKA, LSST, Athena, MeV, CTA) [chairs: R. Diehl & G. Raffelt]

Friday, 09:00 – 10:30 : 3×C, 1×I

Friday, 11:00 – 12:30 : 3×C, 1×I

Friday, 14:00 – 15:40 : 2×C, 2×I

Friday, 16:10 – 17:30 : 4×C

- 1- Supernova Remnants and high and very high energy gamma-ray observations, **J. McEnery**
- 2- Understanding X-ray and gamma-ray emission of RX J1713.7-3946, **J. Ballet**
- 3- The role of the diffusive protons in the gamma-ray emission of SNR RX J1713.7-3946, **X. Zhang**
- 4- The origin of gamma rays in RX J1713.7-3946 and the other shell-like SNRs; evidence for the dominant contribution of the hadronic gamma-rays, **Y. Fukui**
- 5- Now and the Future of Broadband SNR Models, **H. Lee**
- 6- Fermi LAT observations of Supernova Remnants, **F. de Palma**
- 7- The GeV Gamma-Ray Emission Detected by Fermi-LAT Adjacent to SNR Kesteven 41, **B. Liu**
- 8- Overview of VHE gamma-ray emission from the SNRs detected by MAGIC, **S. Masuda**
- 9- VHE gamma-rays from the remnants of Galactic core-collapse supernovae, **R. Chaves**
- 10- Morphology studies and resolved spectroscopy of the Vela Jr. Supernova remnant with H.E.S.S., **I. Sushch**
- 11- Multimessenger predictions from 3D Core-Collapse Supernova Models, **K. Kotake**
- 12- Supernova lessons from low- and high-energy neutrinos, **I. Tamborra**
- 13- Are supernova remnants in the Galaxy and star-forming regions sources of high-energy neutrinos?, **S. Razzaque**
- 14- ANTARES and KM3NeT programs for the supernova neutrino detection, **V. Kulikovskiy**
- 15- Synergy SKA-CTA: supernova remnants as cosmic accelerators, **A. Ingallinera**
- 16- e-ASTROGAM : towards a new space mission for gamma-ray astronomy, **V. Tatischeff**
→ **R. Diehl**