

NUCLEI IN THE COSMOS XVIII

PROGRAM

SUNDAY, June 15

18:00 – 20:00 Welcome cocktail

MONDAY, June 16

8:30 – 9:00 OPENING

[Chair: J. José]

9:00 – 9:30 OVERVIEW TALK, “Nuclear Astrophysics: Perspectives and Challenges”, R. Diehl

Session: Stellar Abundances I – Spectroscopy, Meteorites, Solar System Abundances, Extremely Metal-Poor Stars

[Chair: A. Serenelli]

9:30 – 10:00 INVITED TALK, “Solar System Elemental Abundances”, K. Lodders/M. Bergemann

10:00 – 10:45 Coffee Break

10:45 – 11:15 INVITED TALK, “Abundances of EMP Stars”, M. Ishigaki

11:15 – 11:30 “Deriving Progenitors of Extremely Metal-Poor Stars with Nucleosynthesis Yields of Massive Stars”, R. Jiang

11:30 – 11:45 “The Heavies in CEMP”, S. Van Eck

11:45 – 12:15 INVITED TALK, “Nucleosynthetic Isotope Variations in Meteorites”, L. Nittler

12:15 – 12:30 “Examining Evidence for a Shorter ^{146}Sm - ^{142}Nd Chronology in the Early solar System”, Y. Qian

12:30 – 13:00 FLASH Session I [1-min poster presentations] [Chair: K. Lund]

13:00 – 14:15 Lunch

[Chair: M. Bergemann]

14:15 – 14:30 “R-Process Alliance: Unveiling the Abundance Patterns of Ten r-II Stars Through Homogeneous Spectral Analysis”, M. Racca

14:30 – 14:45 “3D NLTE Abundance of Iron-Peak and Neutron-Capture Elements within GCE Context”, N. Storm

14:45 – 15:00 “Nature’s Fission Fragment Distribution”, E. Holmbeck (USA)

Session: Nuclear Reactions – Experiments

[Chair: K.I. Hahn]

15:00 – 15:30 INVITED TALK, “The Beta-Oslo Method and Neutron-Capture Reactions”, A.-C. Larsen

15:30 – 15:45 “Determining Neutron-Induced Reaction Cross Sections with Surrogate Reactions in Inverse Kinematics at Heavy-Ion Storage Rings”, C. Berthelot

15:45 – 16:15 FLASH Session II [1-min poster presentations] [Chair: A. Calder]

16:15 – 17:00 Coffee Break

[Chair: D. Bemmerer]

17:00 – 17:30 INVITED TALK, “Role of Exotic Nuclei Away from Stability”, S. Nishimura

17:30 – 17:45 “Experimental Investigation on the γ -Emission Probability of the Unbound States in ^{131}Sn Through $^{130}\text{Sn}(\text{d},\text{p})^{131}\text{Sn}$ Reaction Measurement for Understanding R-Process”, S. Bae

17:45 – 18:00 “The Results of the ^{204}Tl and ^{205}Tl Neutron Capture Cross Section Measurement at n_TOF (CERN) and Their Impact to the S-Process-Only ^{204}Pb and ^{205}Pb Production”, A. Casanovas

18:00 – 18:30 INVITED TALK, “Underground Measurements of $^{14}\text{N}(p,\gamma)^{15}\text{O}$ and Other Key Reactions for Nuclear Astrophysics”, G. Gyurky

18:30 – 18:45 “Underground Measurements of the $^{16}\text{O}(p,\gamma)^{17}\text{F}$ Reaction at LUNA”, D. Robb

18:45 – 19:15 FLASH Session III [1-min poster presentations] [Chair: A. Korn]

TUESDAY, June 17

[Chair: G. Martinez-Pinedo]

8:30 – 8:45 “Direct Measurement of the Carbon-Carbon Fusion Cross Section at Stellar Energies”, Y. Li

8:45 – 9:00 “Investigation of ^{31}P Levels Near the Proton Threshold by Nuclear Resonance Fluorescence and the Impact on the $^{30}\text{Si}(p,\gamma)^{31}\text{P}$ Thermonuclear Rate”, D. Gribble

Session: Atomic and Nuclear Inputs for Nuclear Astrophysics

9:00 – 9:30 INVITED TALK, “Atomic Physics Inputs for Kilonova Modelling”, A. Flörs

9:30 – 9:45 “Mass Measurements of Exotic Neutron-Deficient Nuclides Below ^{100}Sn at IGISOL and Their Astrophysical Implications”, Z. Ge

9:45 – 10:00 “Comprehensive Atomic Data for Kilonova Spectral Modeling Beyond the Photospheric Phase”, R. Ferreira da Silva

10:00 – 10:45 Coffee Break

Session: Stellar Abundances II – Presolar Grains

[Chair: L. Nittler]

10:45 – 11:15 INVITED TALK, “Presolar Grains from Supernovae”, N. Liu

11:15 – 11:30 “Correlated Heavy Isotope Signatures in Presolar SiC”, A. Davis

11:30 – 11:45 “The Impact of Extra Mixing in Low-Mass Stars on Presolar Grain Abundance Predictions”, M. Cockshutt

Session: Stellar Evolution I – Hydrostatic Evolution, AGBs, Massive Stars, S-Process

[Chair: S. Goriely]

11:45 – 12:15 INVITED TALK, “Nucleosynthesis in Low- and Intermediate-Mass Stars”, A. Choplin

12:15 – 12:30 “Isomeric State of $^{176}\text{Lu}^m$ and Robustness of a Stellar Thermometer $^{176}\text{Lu}/^{176}\text{Hf}$ for the Main S-Process in AGB Stars”, Y. Luo

12:30 – 13:00 FLASH Session IV [1-min poster presentations] [Chair: E. Masha]

13:00 – 14:15 Lunch

[Chair: A. Karakas]

14:15 – 14:45 INVITED TALK, “Nucleosynthesis and Wind Yields of Very Massive Stars”, E. Higgins

14:45 – 15:00 “The Role of Carbon-Oxygen Shell Interactions in the Nucleosynthesis and Final Fate of Massive Stars”, L. Roberti

15:00 – 15:15 “Comparing the Elemental Yields from Low-Mass Single and Binary Star Populations”, Z. Osborne

15:15 – 15:30 “Common Envelope Nucleosynthesis: Investigation into How Nucleosynthesis Can Vary Across Different Neutron Star Common Envelope Binaries”, A. Hall-Smith

15:30 – 16:00 FLASH Session V [1-min poster presentations] [Chair: A. Kucinkas]

16:00 – 16:45 Coffee Break

Session: Nuclear Theory

[Chair: A. Rios]

16:45 – 17:15 INVITED TALK, “Nuclear Theory Challenges for Nuclear Astrophysics”, S. Goriely

17:15 – 17:30 “Bayesian Uncertainty Quantification of Alpha Elastic Scattering to Constrain the α Optical Model”, C. Marshall (USA)

17:30 – 18:00 FLASH Session VI [1-min poster presentations] [Chair: F. de Oliveira]

18:00 – 20:00 POSTER Session

WEDNESDAY, June 18

[Chair: A. Coc]

8:30 – 8:45 “Microscopic Description of β -Decay Rates of R-Process Nuclei”, D. Alvear-Terrero

Session: Big-Bang Nucleosynthesis and Early Universe

8:45 – 9:15 INVITED TALK, “Big Bang Nucleosynthesis and Early Universe”, B. Fields

9:15 – 9:30 “Neutron Induced Reactions for BBN: the Trojan Horse Approach”, G. Pizzone

9:30 – 9:45 “Ending the Second Cosmological Li Problem”, E. Wang

Session: Stellar Evolution II – Supernovae, Kilonovae, Mergers, R- and P-Process

[Chair: G. Sala]

9:45 – 10:15 INVITED TALK, “Nucleosynthesis in Core-Collapse Supernovae”, A. Arcones

10:15 – 10:45 INVITED TALK, “Neutron Star Mergers and Kilonovae: R-Process and Gravitational Waves”, A. Bauswein

10:45 – 12:00 Brunch

12:00 - ... Excursions

THURSDAY, June 19

[Chair: J. Isern]

8:30 – 8:45 “Trans-Fe Elements from Type Ia Supernovae”, U. Battino

8:45 – 9:00 “Probing Pair-Instability Supernovae via ^{56}Ni Decay Signatures”, R. Sawada

9:00 – 9:15 “3D Simulations of White Dwarf-Main Sequence Star Collisions”, C. van der Merwe

9:15 – 9:30 “Neutrino-Mass Hierarchy and The Roles of Radioactive Nuclear Reactions in Explosive Nucleosynthesis of Supernovae, Collapsars and Mergers”, T. Kajino

Session: Neutrinos

9:30 – 9:45 “Collective Neutrino Oscillations and the Heavy-Element Nucleosynthesis in Supernovae”, X. Wang

9:45 – 10:00 “Neutrino Oscillations in Post-Merger Disks”, K. Lund

10:00 – 10:45 Coffee Break

Session: High-Density Matter and EOS of Neutron Stars

[Chair: L. Tolos]

10:45 – 11:15 INVITED TALK, “The Equation of State of Neutron-Star Matter”, A. Fantina

11:15 – 11:30 “New Constraints on the Neutron Star Equation of State”, M. Mendes

11:30 – 11:45 “Core-Collapse Supernova Simulations Based on the New HWS EOS”, G. Navó

Session: Stellar Evolution III – Novae and XRBs

[Chair: M. Hernanz]

11:45 – 12:15 INVITED TALK, “Nucleosynthesis in Explosive H-Burning Scenarios”, H. Schatz

12:15 – 12:30 “H-triggered X-Ray Bursts on Slowly Accreting Neutron Stars”, S. Casten

12:30 – 12:45 “Experimental Study of the $^{15}\text{O}(\alpha,\gamma)^{19}\text{Ne}$ Reaction for Understanding Type I X-Ray Bursts”, N. de Séréville

12:45 – 13:00 “Weak RP-Process Nucleosynthesis in Low-Metallicity Nova Explosions”, I. Psaltis

13:00 – 14:15 Lunch

Session: Galactic Chemical Evolution

[Chair: Y. Cavecchi]

14:15 – 14:45 INVITED TALK, “Recent Advances in Galactic Chemical Evolution”, G. Cescutti

14:45 – 15:00 “Galactic Chemical Evolution with Short-Lived Radioactive Isotopes”, B. Wehmeyer

15:00 – 15:15 “ ^{26}Al : How to Model a Short-Lived Radioactive Isotope – From a 1D to a 2D Approach”, A. Vasini

Session: New Facilities and Techniques

[Chair: F. Hammache]

15:15 – 15:45 INVITED TALK, “Nuclear Astrophysics at the Bellotti Facility, Laboratori Nazionali del Gran Sasso”, M. Junker

15:45 – 16:15 INVITED TALK, “Nuclear Astrophysics at JUNA”, W. Liu

16:15 – 17:00 Coffee Break

[Chair: K. Langanke]

17:00 – 17:15 “Nuclear Astrophysics Activities at CENS”, K.I. Hahn

17:15 – 17:30 “Direct Measurement of Neutron Capture on Radioactive Isotopes at CERN n_TOF”, C. Domingo-Pardo

17:30 – 18:00 INVITED TALK, “Nuclear Astrophysics at FRIB”, C. Wrede

18:00 – 18:15 “Investigating Explosive Nucleosynthesis Through Measurements of (α ,n) and (p,n) Reactions Using SECAR”, P. Tsintari

18:15 – 18:30 “Nuclear Astrophysics with Stored Highly Charged Radioactive Ions”, Y. Litvinov

19:00 - ... Conference Banquet

FRIDAY, June 20

[Chair: H. Schatz]

9:00 – 9:15 “Measuring Decays of Excited States in ^{26}Si to Improve Reaction-Rate Calculations of $^{22}\text{Mg}(\alpha, p)^{25}\text{Al}$ Relevant to Type I X-Ray Bursts”, J.W. Brummer

9:15 – 9:30 “The E1 and E2 Capture Amplitudes in $^{12}\text{C}(\alpha, \gamma)^{16}\text{O}$ Around the 2.42 MeV Resonance”, K. Chakraborty

9:30 – 9:45 “Neutron-Induced Reactions in a High-Density Inertial Confinement Plasma and Their Nuclear Astrophysics Nexus”, M. Paul

Special Session: Remembering Don Clayton, Roberto Gallino & Karl-Ludwig Kratz

9:45 – 10:15 R. Diehl, M. Busso and F.-K. Thielemann

10:15 – 11:00 Coffee Break

Special Session: Gravitational Waves and Nuclear Astrophysics

[Chair: R. Hirschi]

11:00 – 11:30 INVITED TALK, “Exploring Dense Matter Physics with Gravitational Wave Detections of Neutron Stars”, L. Suleiman

11:30 – 11:45 “Quark-Matter Equation of State Effects during Binary Neutron Star Mergers”, G. Mathews

11:45 – 12:00 “Inference of Multi-Channel R-Process Element Enrichment in the Milky Way Using Neutron Star Merger Observations”, H.-Y. Chen

12:00 – 12:15 “Gravitational Waves and Nucleosynthesis of Binary Neutron-Star Simulations”, G. Riveccio

12:15 – 12:30 “Constraining Skyrme-Based Neutron Star Equation of State from Multi-Messenger Observations”, A. Mukherjee

12:30 – 12:45 “3D Core-Collapse Supernova Models with Phenomenological Treatment of Neutrino Flavor Instabilities”, K. Mori

12:45 – 13:00 CLOSING