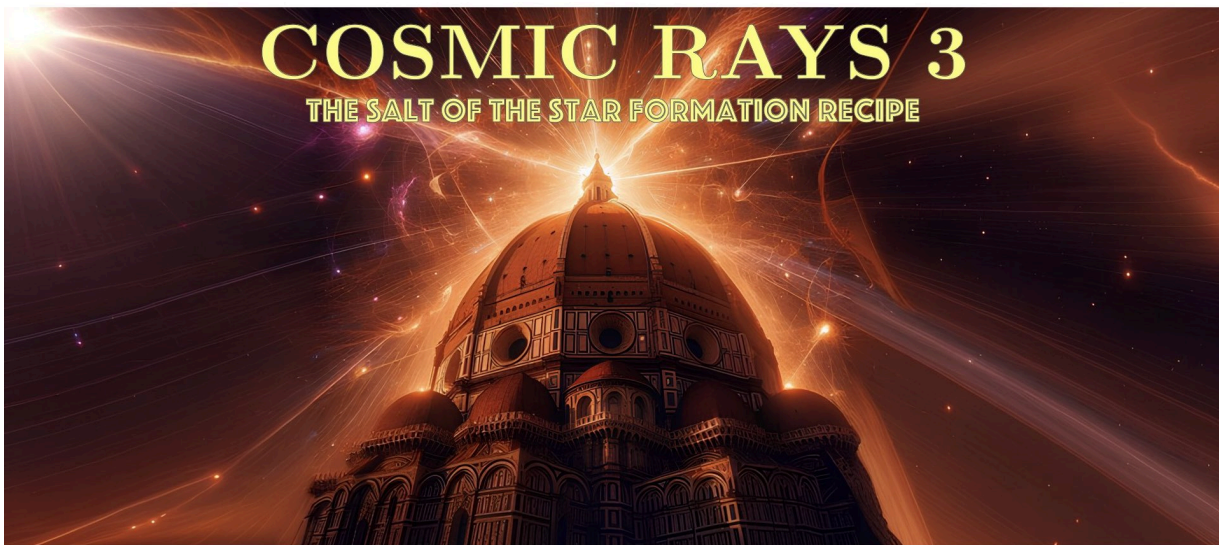


Scientific Programme



22nd – 24th October 2024




Arcetri, Florence, Italy

Department of Physics and Astronomy

<https://www.arcetri.inaf.it/cosmicrays3/>




Tuesday, October 22nd

08:30-09:15	Registration	
09:15-09:30	Welcome and logistics	
Chair: Marco Padovani		
09:30-10:00	(I) Donna Rodgers-Lee	The effect of cosmic rays on planetary atmospheres
10:00-10:20	(C) Deryl Long	Cosmic roller coaster: tracing the highs and lows of cosmic-ray ionization in protoplanetary disks
10:20-10:40	(C) Shmuel Bialy	ISM structure and the star formation rate - the role of CRs
10:40-11:10	Coffee break and Posters	
Chair: Víctor Rivilla		
11:10-11:40	(I) Nick Indriolo	Cosmic-ray Ionization Rates with H_3^+ : an Expanded Sample
11:40-12:00	(C) Alessandro Lupi	The impact of a consistent cosmic-ray propagation on the chemistry of pre-stellar cores
12:00-12:20	(C) Miguel Pereira-Santaella	Ionization rate in extreme dusty starbursts using JWST
12:20-12:40	(C) Alexandre Marcowith	In-situ accelerated energetic particles in the environment of young stellar objects
12:40-13:00	(C) Farhad Zadeh	Synchrotron Emission from the Halo of the Sgr B Molecular Cloud
13:00-14:30	Lunch	
Chair: Lucia Armillotta		
14:30-15:00	(I) Andrea Bracco	The Imprint of Cosmic Rays on Galactic Synchrotron Emission: Insights and Challenges from Low-Frequency Radio Observations
15:00-15:20	(C) Stefano Bovino	Simulations-validated analytical methods to estimate the cosmic ray ionization rate and ionization fraction in dense clouds
15:20-15:40	(C) Tommaso Grassi	Constraining uncertainties in cosmic rays chemical modeling
15:40-16:00	(C) Michał Hanasz	CR electrons propagation, polarised synchrotron emission and spectral index maps of live MHD models of spiral galaxies
16:00-16:20	(C) Troy Porter	Probing the radio/infrared/gamma-ray relation in the nearby interstellar medium of the Milky Way
16:20-16:50	Coffee break and Posters	


Chair: Alexei Ivlev		
16:50-17:20	(I) Stefano Gabici	On the transport of low energy cosmic rays in and outside interstellar clouds
17:20-17:40	(C) Gan Luo	Measuring the cosmic-ray ionization rate in nearby clouds
17:40-18:00	(C) Karin Kjellgren	The dynamical impact of cosmic rays in Milky Way-like galaxies


Wednesday, October 23rd

Chair: Christopher Shingledecker		
09:00-09:30	(I) Dominique Meyer	Galactic cosmic ray re-accelerators in star-forming regions
09:30-09:50	(C) Sarah Recchia	Can a cosmic ray carrot explain the ionization level in diffuse molecular clouds?
09:50-10:10	(C) Katarzyna M. Dutkowska	Lessons from the Galactic center: Chemistry under extreme conditions
10:10-10:30	(C) Maryam Khademi	Non-thermal Radio Spectral Energy Distribution in MIGHTEE-COSMOS Highly Star-Forming Galaxies at $1.5 < z < 4.5$
10:30-11:00	Coffee break and Posters	
Chair: Elisabetta Palumbo		
11:00-11:30	(I) Duncan Mifsud	Radiation-Driven Chemistry in Ices in Space: Laboratory Simulations and Results
11:30-11:50	(C) Valentin Brunn	Impacts of Energetic Particles from T Tauri Flares on Inner Protoplanetary Discs
11:50-12:10	(C) Kamber Schwarz	Evidence of Enhanced Ionization in Protostellar Envelopes
12:10-12:30	(C) Arshia Maria Jacob	Investigating the cosmic-ray ionisation rate in diffuse atomic clouds
12:30-13:00	Poster presentations	
13:00-14:30	Lunch	
Chair: Daniele Galli		
14:30-15:00	(I) Alexei V. Ivlev	Re-evaluation of the cosmic-ray ionization rate in diffuse clouds
15:00-15:20	(C) Miriam G. Santa-María	High-mass star-forming regions recipe: cosmic rays in Sgr B2

15:20-15:40	(C) Giovanni Sabatini	The ALMA-UNIC Large Program: a new frontier for the CRs study in massive star-forming regions
15:40-16:00	(C) Giada Peron	Gamma-rays as probes of Galactic cosmic rays
16:00-16:30	Coffee break and Posters	
Chair: Stefano Bovino		
16:30-17:00	(I) Yasuhiro Oba	Nucleobases in the laboratory and asteroids
17:00-17:20	(C) Evgenia Koutsoumpou	The effects of Cosmic-ray ionization rate on the nebular gas in nearby AGN and starburst galaxies
17:20-17:40	(C) Nicolas Peschken	Regulating Star Formation through Cosmic Ray driven winds
20:30	CONFERENCE DINNER	

Thursday, October 24th

Chair: Giovanni Sabatini		
9:00-9:30	(I) Hermann Rothard	Complex organic molecules in space: swift ion irradiation
9:30-9:50	(C) Erica Behrens	Neural Network Constraints on the Cosmic-Ray Ionization Rate in NGC 253 with ALCHEMI Measurements of HCN and HNC
09:50-10:10	(C) Tianyu Tu	Chemistry induced by cosmic rays towards supernova remnants W28 and 3C391
10:10-10:30	(C) Andrea Socci	Parsec-scale cosmic-ray ionisation rate in Orion
10:30-11:00	Coffee break and Posters	
Chair: Andrea Bracco		
11:00-11:30	(I) Jaime Pineda	Mapping Cosmic Rays in low-mass star-forming regions
11:30-11:50	(C) Aimie Clément	Study of cosmic-ray acceleration regions through their chemical composition
11:50-12:10	(C) Mohammed Rashid	Indication of Nonthermal Radio Emission from Orion Nebula: Cosmic Ray Acceleration from Stellar Winds?
12:10-12:30	(C) Nora Linzer	Modeling cosmic ray electron spectra and synchrotron emission in the multiphase ISM

12:30-14:00	Lunch	
Chair: Giada Peron		
14:30-14:50	(C) Nicholas Owens	Hyperbolic conduction: going beyond Euler
14:50-15:10	(C) Theodoros Topkaras	Cosmic-ray attenuation in models of Photodissociation Regions
15:10-15:30	(C) Antoine Baldacchino-Jordan	Modelling spectrally-resolved primary and secondary cosmic ray nuclei in the life MHD stratified-box simulations of interstellar medium
15:30-15:50	(C) Ryota Ichimura	Carbon Isotope Fractionation of Complex Organic Molecules in Star-Forming Cores
15:50-16:10	Final remarks	

Poster contributions

1	Lucia Armillotta	Energy-dependent transport of cosmic rays in the interstellar medium
2	Nai Chieh Lin	Study of the effect of cosmic rays on the formation of protostellar systems
3	Marco Padovani	Ultraviolet H ₂ luminescence in molecular clouds induced by cosmic rays
4	Víctor M. Rivilla	The cosmic-ray ionisation rate of the Galactic center: new interstellar cations discovered towards G+0.693-0.027
5	Christopher Shingledecker	Simulating cosmic ray-driven ion-ice chemistry
6	Gonzalo Ladrille	Impact of cosmic ray propagation on ionized species at clump scale