Challenges and Innovation in Computational Astrophysics 7 (ChaICA-7)

Organized by IAU Commission B1 (Virtual Meeting)

Schedule

TUE		
17th Nov	**Speaker**	**Title**
8:00 - 10:15 UTC **session 1**		
8:00-8:30	Max Gronke **(I)**	Challenges and surprises modeling multiphase, turbulent media
8:30-8:50	Arun Mathew	From Radiation-Hydrodynamic Simulations to Synthetic Spectroscopy of Massive-Star Plasmas
8:50-9:10	Evgenii Vasiliev	Destruction of the interstellar dust by a supernova
9:10-9:30	Toushif Alam	Can Sgr A* Feedback Shape the Eccentric Galactic Centre Molecular Zone?
9:30-9:50	Natalya Kargaltseva	Numerical Modeling of the Initial Stages of Star Formation Using the 2D MHD code Enlil
9:50-10:10	C V Sreejith	Simulating Radio Protostellar Jets
13:00 - 15:00UTC **session 2**		
13:00-13:30	Sophie Rosu **(I)**	The Beauty of k2: Probing the interiors of massive binary stars using apsidal motion
13:30-13:50	Aleena Sheikh	Burstspec: a vectorised JAX pipeline for time-resolved spectroscopy of thermonuclear X-ray bursts in NICER data
13:50-14:10	Sathya Margerate	Testing the Reliability of Nonlinear Recurrence Analysis under Gaps in TESS Light Curves
14:10-14:40	Maria del Valle **(I)**	Astrophysical modelling of shocks
14:40-15:00	Ilyas Sultanov	Study of the magnetic field evolution in molecular filament cores with the FLASH code
20:00 - 22:00UTC **session 3**		
20:00-20:30	Francisco Villaescusa-Navarro **(I)**	Will the next revolution in astrophysics be driven by AI-agents?
20:30-20:50	Piotr Marciniak	CMC-ML
20:50-21:10	Prateek Mayank	MHD Solar Wind Simulation with Neural Operator: A Fast and Differentiable Modeling Framework
21:10-21:30	MEGHA bodkhe	"Spectroscopic Properties of Small Interstellar Molecules: A Quantum Chemical Approach -A Systematic Literature Review with Meta-Analysis".
21:30-21:50	Arkadiusz Hypki	CMC-SURVEY — a public, open-access, fully downloadable, extensive database of detailed globular cluster models produced with the CMC code
WED		
18th Nov	**Speaker**	**Title**
8:00 - 10:15 UTC **session 1**		
8:00-8:30	Ashish Mahabal **(I)**	Applying ML Techniques to Astronomical Transient Datasets
8:30-8:50	Marco Bischoff	A Scalable TNO Classifier for Evaluating Solar System Formation Models
8:50-9:10	Asish Jyoti Boruah	Dissipative Transonic Accretion Flows around Rapidly Rotating Black Holes
9:10-9:30	Liza Devi	Shock-Free Global Transonic Accretion Flows in Conical Geometry around black holes

9:30-9:50	Ivan Almeida	Simulating AGN Jet–Cloud Interactions: From Relativistic MHD to Synthetic Synchrotron Emission
9:50-10:10	Biplob Sarkar	Computational Modeling of Magnetized Accretion Flows: Shocks, Dissipation, and Observational Signatures in Black Hole Systems
13:00 - 15:00UTC **session 2**		
13:00-13:30	Hajime Fukushima **(I)**	SFUMATO#: a GPU-accelerated code for Self-Gravitational Radiation Hydrodynamics Simulation with AMR
13:30-13:50	Olaf Willocx	Adaptive mesh refinement on GPUs at scale with AGILE
13:50-14:10	Francesco Maria Flammini Dotti	Nbody6++GPU-ML: a new frontier for the study of free-floating planets, comets and small brown dwarfs
14:10-14:30	Gexian Chen	Overcoming CPU Bottlenecks in N-body Simulations: Integrating the Bonsai Treecode into PeTar
14:30-14:50	Zhifeng Guo	Enforcing Time-Symmetric Steps in the Hermite Integrator to Reduce Secular Eccentricity Drift in Binary Orbits
THU		
19th Nov	**Speaker**	**Title**
8:00 - 10:10 UTC **session 1**		
8:00-8:30	Jessica Doppel **(I)**	Investigating star clusters and tiny galaxies at cosmic dawn with LYRA
8:30-8:50	Jeremy Karam	Conversions of Grid to Particle Representations for Numerical Simulations
8:50-9:10	Yuka Kaneda	Dynamical traces on stellar streams by dark matter subhalos fly-by
9:10-9:30	Atul Ashutosh Samanta	Developing Numerical Methods for Fuzzy Dark Matter in Isolated Galaxy Simulations
9:30-9:50	Jayesh Saraswat	A Novel Game-Theoretic Particle-Assignment Algorithm for Subhalo Identification
9:50-10:10	Tomáš Šoltinský	Precision modelling of the Lyα forest 3D power spectrum from linear to highly non-linear scales
13:00 - 15:30UTC **session 2**		
13:00-13:30	Claude Cournoyer-Cloutier **(I)**	Modelling binary stars in young star clusters: dynamics, feedback, and numerical challenges
13:30-13:50	Tomomune Nishino	Binary black holes from clumpy globular clusters: simulating sub-virial collapse with PeTar
13:50-14:10	Long Wang	BTLogH: Improved algorithmic regularization for simulating few-body stellar systems
14:10-14:30	Naoto Harada	Dynamical Evolution of Primordial Binaries during Star Cluster Formation
14:30-14:50	Bharti Kaushik	Primordial black hole
14:50-15:20	Arif Babul **(I)**	Modeling the Emergence of the CGM and the Multiphase Structure therein