FM7: New Horizons at the Interface Between Computational Astrophysics and Big Data

Invited talks 25min+5min questions and contributed talks 12min+3min questions	
Invited talk	Virtual Talk

6th August	Speaker	Title
08:30 - 10:00	Registration	
10:00 - 10:30		Posters: Session 1
		Session 1 - Chair: Shazrene Mohamed
10:30 - 10:45	Yosuke Mizuno	Numerical Modeling and Constraint of the Shadow of the Supermassive Black Holes
10:45 - 11:00		
11:00 - 11:15	Iniyan Natarajan	Anime.jl: Instrument Modelling for next generation VLBI arrays
11:15 - 11:30	Tirthankar Roy Choudhury	Exploring the High-Redshift Universe Using SKA and Other Upcoming Observational Facilities
11:30 - 11:45		
11:45 - 12:00	Lucia Marchetti	Scientific Exploration of Spectral Cubes and Particles using Immersive Technology: iDaVIE, paving the way to the SKA
12:00 - 13:30	Lunch	
		Session 2 - Chair: Iniyan Natarajan
13:30 - 13:45	Michelle Lochner	Enabling New Discoveries with Machine Learning
13:45 - 14:00		
14:00 - 14:15	Fernando Ventura	Enhancing Discovery in Large Surveys with Machine Learning
14:15 - 14:30	Sambatra Andrianomena	Emulating cosmological simulation dataset (CAMELS) with generative model
14:30 - 14:45	Connor Bottrell	Big MockData: Understanding galaxies with simulation-based inference
14:45 - 15:00	Gordian Edenhofer	The Statistical and Computational Challenges in Astrophysical Imaging
15:00 - 15:30		Posters: Session 2
		Session 3 - Chair: Russ Taylor
15:30 - 15:45	Rob Simmonds	ilifu: A cloud computing system supporting Astronomy and Bioinformatics
15:45 - 16:00		
16:00 - 16:15	Oleg Smirnov	Africanus IV. Stimela2 – scalable and fully reproducible data reduction workflows, from on-premises to HPC to cloud
16:15 - 16:30	Thomas Dutkiewicz	Lowering Barriers to Big Data in Astronomy: A Cloud Platform for the 21st Century
16:30 - 16:45	Amelia Bayo	La Serena School for Data Science and the Spanish Virtual Observatory Schools, two initiatives based on hands on experience.
16:45 - 17:00		
17:15 - 18:30		Opening ceremony

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8th August	Speaker	Title
08:30 - 10:00		IAUS 390 plenary
10:00 - 10:30		Posters: Session 3
		Session 4 - Chair: Bhargav Vaidya
10:30 - 10:45	Hsin-Yu Chen	Science opportunities and challenges with next-generation ground-based gravitational-wave observations
10:45 - 11:00		
11:00 - 11:15	Minia Manteiga	Disentangling stellar atmospheric parameters in astronomical spectra using Generative Adversarial Neural Networks
11:15 - 11:30	Priyanka Jalan	FLAME: Fitting LyαAbsorption lines using Machine lEarning
11:30 - 11:45	Adrien Thob	Synthetic survey catalogs for the Galactic Roman Infrared Plane Survey (GRIPS) using py-ananke
11:45 - 12:00	Robert Feldmann	Accelerating the Computational Modeling of Cosmic Gas with Deep Learning
12:00 - 13:30	Lunch/Gruber Prize	
		Session 5 - Chair: Lieke van Son
13:30 - 13:45	Anshu Dubey	Exascale Computation of Core-Collapse Supernovae with Flash-X
13:45 - 14:00		
14:00 - 14:15	Federica Bianco	Rare, faint, time evolving, and morphologically diverse: how to approach a pessimal computer vision challenge and automate the detection of light echoes at scale
14:15 - 14:30	Guillermo Cabrera	ALeRCE: Machine Learning for multistream/multicadence alert streams
14:30 - 14: 45		
14:45 - 15:00	Bernardo Fraga	Transient Classifiers in the Fink broker: preparations for the LSST era
15:00 - 15:30		Posters: Session 4
		Session 6 - Chair: Michiko Fujii
15:30 - 15:45	Keiya Hirashima	Surrogate Modeling for Supernova Feedback toward Star-by-Star Simulations of Milky-Way-sized Galaxies
15:45 - 16:00	Damien Chapon	The Galactica database: an open, generic and versatile tool for the diffusion of numerical simulation data in astrophysics
16:00 - 16:15		
16:15 - 16:30	Lindsay House	Unlocking Astronomical Discoveries: Harnessing Zooniverse and Machine Learning for Large Data Sets
16:30 - 16:45	Sandor Kruk	ESA Datalabs: Addressing Big Data Challenges in Space Science
16:45 - 17:00	Michiko Fujii	Summary
17:15 - 18:30		Invited Discourse 1

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Poster Session 1:

Poster ID	Presenter	Title
493	Emma Tolley	BIPP: An efficient HPC implementation of the Bluebild algorithm for radio astronomy
703	Richard Dodson	Imaging Spectral-Line Deep Fields in the SKA-Era: insights from CHILES and DINGO
833	Jordan Collier	Exascale Science with the AusSRC: Building on the Big Data Precursors
1092	Nathan Deg	Modelling WALLABY's: Challenges of, and Solutions for, Automated Kinematic Modelling of Galaxies in Large Surveys
1512	Danny Price	Handling the Data Deluge from the Square Kilometre Array telescope
1604	Nathan Deg	3D Asymmetries and their application to Simulations and Surveys
2266	Jonathan Kenyon	Africanus II. QuartiCal - Scaling radio interferometric calibration from your laptop to the cloud
2280	Landman Bester	Africanus III. Deconstructing a Radio Interferometric Imager to Foster Better Algorithms
2283	Simon Perkins	Africanus I. Scalable, distributed and efficient radio data processing with Dask-MS and Codex Africanus
2293	Dionisio Candido	MeerKAT-VLBI: First steps to African VLBI Network
2506	Hanwool Koo	Application of anomaly detection to MeerKAT radio data using machine learning techniques
2904	Nomthendeleko Motha	Leveraging the synergies between next-generation surveys with the SKA and LSST
1236	Hackathon Highlights	

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Poster Session 2:

Poster ID	Presenter	Title
116	Naa Ayeley Ekue	Evaluating the Efficacy of Physics-Informed Neural Networks for Astrophysical and Astronomical Data Simulations
941	Lindsay House	Dark Energy Explorers: Understanding Dark Energy with the Synergistic Use of Participatory Science and Machine Learning
1381	Guojian Wang	CoLFI: Likelihood-free Inference with Neural Density Estimators
1414	Koketso Mohale	Enabling unsupervised discovery in astronomical images through self-supervised representations.
2269	Minh Huynh	Novel Computer Vision Applications for Big Data in Astronomy
2994	Albertus Seyffert	Toward Effective Early Anomaly Detection via Machine Learning and Prompt Alert Follow-up for the Rubin Observatory
2683	Evgenii Rubtsov	RCSEDv2: algorithm for automatic analysis of spectra with multicomponent emission lines using the NBursts full spectrum fitting technique.
2791	Anastasia Baluta - virtual	Analysis of Zwicky Transient Facility alert stream data using the anomaly detection module of the Fink broker.
766	Hackathon Highlights	

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Poster Session 3:

Poster ID	Presenter	Title
769	Agnieszka Janiuk	Gamma Ray Bursts and their central engines studied by computational hydrodynamics methods
935	Paramita Barai	Cosmological Hydrodynamical Simulations to probe the Evolution of Galaxies and their central Black Holes
1005	Dongsu Ryu	A New High-Order Magnetohydrodynamic Code with a High-Order Constrained Transport Scheme
1239	Shelley Cheng	Estimating Eruptive Mass Loss in Massive Stars with MESA
1245	Zsolt Keszthelyi - virtual	Bridging dimensions: numerical simulations of core-collapse supernova progenitors in 1, 2, 3D
1500	Tuğba EROL - virtual	Determination of the merger time in shell galaxies with IllustrisTNG
1857	Lawrence Faria - virtual	Probing Star Formation in Interacting Galaxies through Cosmological Simulations
2051	Irina Kitiashvili	Synergy of 3D Realistic Modeling of the Turbulent Dynamics of the Sun and Observations from SDO, Hinode, and IRIS Space Missions
2182	Reuben Immelman	Polarisation and SED Modelling of Magnetised Relativistic AGN Jets using RMHD Simulations.
2412	Izak Van der Westhuizen	Morphological differences in RMHD simulations of High and Low Lorentz factor AGN jets
2516	Wenxiang Pei	Simulating emission line galaxies for the next generation of large-scale surveys
2992	Gerardo Urrutia Sanchez	The large-scale interaction between short GRB jets and disk outflows from NSNS and BHNS mergers
1870	Hackathon Highlights	

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Poster Session 4:

Poster ID	Presenter	Title
205	Grigorii Tsurikov	Theoretical predictions of nitric oxide detection in exoplanet atmospheres with Spectr-UF: simple numerical models for solving big observational problems.
675	Areg Mickaelian	Big Data in Astronomy: Surveys, Catalogues, Databases, Archives and VOs
809	Connor Stone - virtual	AstroPhot: Fitting Everything Everywhere All at Once in Astronomical Images
1019	Susanne Pfalzner	Towards FAIR astrophysics simulations
1137	Danila Makarov	The next generation of the HyperLeda database
1153	Verlon Etsebeth	Astronomaly at Scale: Searching for Anomalies Amongst 4 Million Galaxies
1243	Alice Allen	How Important is Software to Astronomy?
1264	Alisher S. Hojaev	Big Data and Novel Processing Capabilities in Stellar Variability
1576	Nikhil Arora	Comparing simulations and observations of disk galaxies.
1735	Athanaseus Ramaila	CARACal: A Comprehensive Container-based Data Reduction Pipeline for Radio Astronomy
1846	Srikrishna Sekhar	Scientific Computing at Scale : How do we approach a petabyte scale problem?
2011	Spyros Kasapis	Turning SDO Noise Into Van Allen Radiation Belt Characterization Data
2179	Hackathon Highlights	