



Agenzia Spaziale Italiana



MASTER IN ASTROPHYSICS AND SPACE SCIENCE



Funded by the European Union

## MASS Winter School 2022 /2023

16<sup>th</sup> -18<sup>th</sup> January 2023

Location: ASI Headquarters (first 2 days) and University of Rome “Tor Vergata” (third day)

# *Astrostatistics and Big Data approaches*

<p><i>January 16<sup>th</sup>, 2023</i></p> <p><i>Morning – Intro +Science and data analysis examples</i></p> <p>09:00 – 09:15 <b>Welcome</b> - ASI Director of Science and Research, Ing. Mario Cosmo</p> <p>09:15 – 09:30 <b>Welcome</b> – UTOV, MASS Consortium Coordinator, Prof. Nicola Vittorio</p> <p>09:30 – 10:30 <b>An Introduction to ASI-SSDC</b> – Dr Gianluca Polenta (Head of ASI – Space Science Data Center)</p> <p>10:30 – 11:00 Coffee break</p> <p>11:00 – 12:30 <b>Data &amp; Gravitation and Cosmology</b></p> <p>“Cosmology through CMB, galaxy surveys and their correlation” - Dr Gianluca Polenta (ASI-SSDC) and Prof. Marina Migliaccio (University of Rome “Tor Vergata”)</p> <p>12:30 – 14:00 Lunch</p>	<p><i>January 16<sup>th</sup>, 2023</i></p> <p><i>Afternoon– Science and data analysis examples</i></p> <p>14:00 – 15:30 <b>Data &amp; Space Science</b></p> <p>“The Solar Orbiter mission: remote sensing solar instruments and first results” - Dr Marco Stangalini (ASI)</p> <p>“The Solar Orbiter mission: <i>in situ</i> solar wind instruments and first results” - Dr Denise Perrone (ASI)</p> <p>15:30 – 17:00 <b>Data &amp; Solar System and NEOs</b></p> <p>“Solar System Robotic Exploration: history, data fusion and data management” - Dr Eleonora Ammannito and Dr Angelo Zinzi (ASI)</p> <p>17:00 End</p>
<p><i>January 17<sup>th</sup>, 2023</i></p> <p><i>Morning – Science and data analysis examples</i></p> <p>09:30 – 11:00 <b>Data &amp; Exoplanets</b></p> <p>“Exoplanets: a brief introduction to the detection methods” - Prof. Luigi Mancini (University of Rome “Tor Vergata”)</p> <p>“Characterising planetary (and stellar) atmospheres at high spectral resolution” - Dr Andrea Chiavassa (Université de la Côte d’Azur)</p>	<p><i>January 17<sup>th</sup>, 2023</i></p> <p><i>Afternoon – Science and data analysis examples</i></p> <p>14:00 – 15:30 <b>Data &amp; GW</b></p> <p>- Prof. Viviana Fafone (University of Rome “Tor Vergata”)</p> <p>“Looking for gravitational-wave sources with LIGO-Virgo-KAGRA detectors” - Dr Marie-Anne Bizouard (CNRS &amp; Observatoire de la Côte d’Azur)</p>

<p>11:00 – 11:20 Coffee break</p> <p>11:20 – 12:50 <b>Data &amp; High Energy Astrophysics</b></p> <p>“Black Holes – observing the invisible” – Prof. Claus Lämmerzahl (University of Bremen)</p> <p>“From research &amp; development to flight: the (happy-ending) story of X-ray polarimetry” - Dr Fabio Muleri (INAF-IAPS)</p> <p>12:50 – 14:00 Lunch</p>	<p>15:30 – 17:00 <b>Data &amp; AstroTechniques</b></p> <p>“Searching for transient events with Cherenkov Telescopes” - Dr Alessandro Carosi (INAF-OA Roma)</p> <p>“AGN photometric reverberation mapping with LSST – intro tutorial with jupyter notebook examples” - Prof. Dragana Ilić and Prof. Andjelka Kovačević (University of Belgrade – Faculty of Mathematics)</p> <p>17:00 End</p>
<p><i>January 18<sup>th</sup>, 2023</i></p> <p><i>Morning – Hands-on session (in UNITOV Aula 17)</i></p> <p>09:00 Astrophysical s/w or Python (Data Access + Analysis or Tool Kit, es. ExoCTK, Astropy, Sunpy) 4h – Prof. Dario Del Moro (University of Rome “Tor Vergata”)</p>	<p><i>January 18<sup>th</sup>, 2023</i></p> <p><i>Afternoon – Hands-on session (in UNITOV Aula 17)</i></p> <p>14:30 Astrophysical s/w or Python (Data Access + Analysis or Tool Kit, es. ExoCTK, Astropy, Sunpy) 2h – Prof. Dario Del Moro (University of Rome “Tor Vergata”)</p> <p>16:30 Future Perspectives and Research Areas (open discussion with students) 2h</p>