

# Workshop

## “Science with current and future solar physics missions”

Auditorium ASI, Via del Politecnico snc, Roma

1-3 febbraio 2023

**Mercoledì 1 febbraio 2023**

**11:00** - Welcome ASI

- Ing. Mario Cosmo - Direttore Scienza e Ricerca ASI
- Dott.ssa Barbara Negri - Responsabile Unità Volo Umano e Sperimentazione Scientifica ASI

**Session Chair: M. Stangalini**

**11:30** First year of Solar Orbiter Metis coronagraph nominal mission phase (M. Romoli)

**11:45** The Italian scientific contribution to the Solar Wind Analyzer on board Solar Orbiter (R. D'Amicis)

**12:00** The dynamic solar corona: the MUSE mission and the Italian contribution (F. Reale)

**12:15** The Solar-C mission (V. Andretta)

**12:30** The HELiospheric pioNeer for sOlar and interplanetary threats defeNce (HENON) mission (M. Laurenza)

**12:45** Sun CubE OnE: A multi-wavelength synoptic solar micro satellite (F. Berrilli)

**13:00** Solar flare X-ray polarimetry in the near future (CUSP) and future prospects (S. Fabiani)

**13:15 14:30** Pausa pranzo

**Session chair: R. D'Amicis**

**14:30** PROBA-3/ASPIICS formation-flying metrology and relevance for the science (D. Loreggia)

**14:45** Plasma Observatory ESA M7 candidate mission: unveiling plasma energization and energy transport through multiscale observations (F. Marcucci)

**15:00** The reconstruction of electron and differential emission measure maps using visibilities recorded by the Spectrometer/Telescope for Imaging X-rays on-board Solar Orbiter (M. Piana)

15:15	Fundamental plasma processes in the solar corona and solar wind with Metis and SWA onboard Solar Orbiter (D. Telloni)
15:30	A high latitude coronal mass ejection observed by Solar Orbiter/Metis and by other coronagraphs (G. Zimbardo)
15:45	Relationship between high FIP bias and magnetic wave power (M. Murabito)

16:00-16:30 Break

**Session chair: C. Plainaki**

16:30	(REMOTE) Space weather related activities and projects on-going at INAF-Turin Observatory (A. Bemporad)
16:45	(REMOTE) Cosmic-ray and solar energetic particle monitoring capability of the Solar Orbiter Metis coronagraph (C. Grimani)
17:00	(REMOTE) Developing coronal 2D maps of the solar wind HI outflow velocity through the application of the Doppler dimming technique (G. Capuano)
17:15	(REMOTE) The turbulent energy cascade in the inner heliosphere with Solar Orbiter SWA and MAG measurements (L. Sorriso-Valvo)
17:30	(REMOTE) Coronal Diagnostic Experiment (CODEX) (J. Newmark)
17:45	Coronal energy release by MHD avalanches: EUV diagnostics of a multi-threaded coronal loop (G. Cozzo)

**Giovedì 2 febbraio 2023**

**Session chair: D. Perrone**

9:30	Two research projects on space weather forecasting: computational background and main objectives (A. M. Massone)
9:45	Metis: architecture and operations of the Metis Operation Facility (L. Bramante)
10:00	Synergies between Solar Orbiter/Metis and next-generation coronagraphs for the observation of the solar corona (R. Susino)
10:15	Multi-wavelength view of Dark Halos around active regions (S. Lezzi)
10:30	Energy transfer and dissipation in space plasmas: renewed opportunities for in-situ measures (O. Pezzi)
10:45	Radial evolution of coronal hole solar wind: observations by Solar Orbiter and Parker Solar Probe (S. Perri)

11:00 - 11:30 Break

**Session chair: M. Romoli**

11:30	Qual è attualmente il ruolo scientifico/politico della “Fisica dei Plasmi Spaziali”? (V. Carbone)
11:45	Helianthus: A Space Weather Mission with Solar Photonic Propulsion (F. Landini)
12:00	High cadence Metis observations (D. Spadaro)
12:15	An innovative technique for separating proton core, proton beam and alpha particles in solar wind 3D velocity distribution functions (R. De Marco)
12:30	Following and modelling solar irradiance variations (I. Ermolli)
12:45	Spacetime structure of plasma turbulence in 3D Hall-MHD numerical simulations (E. Papini)
13:00	Small-scale eruptive phenomena observed by IRIS as a probe of reconnection in the solar atmosphere (S. Guglielmino)
13:15	Solar Orbiter observations of magnetic reconnection on 16 July 2020 14:30 (F. Marcucci)

13:30-14:30 Pausa pranzo

**Session chair: F. Reale**

14:30	Software Tools for Analysis of Coronagraphic Data (S. Giordano)
14:45	Eruptive events with very bright emission in H I Ly-alpha observed with the Metis coronagraph (G. Russano)
15:00	Multipoint Turbulence Analysis with Helioswarm (S. Servidio)
15:15	The large scale structure of the coronal streamer belt by Solar Orbiter/Metis and EUI observations and prospectives with PROBA3/ASPIICS (L. Abbo)
15:30	Probing the inner heliosphere and solar corona with comets (G. Nisticò)
15:45	An “Ecosystem” for Solar Coronal Studies with Current and Future Missions (S. Fineschi)

16:00-16:30 Break

**Session chair: V. Andretta**

16:30	Energetic particle propagation across a switchback (F. Malara)
16:45	Homologous Solar Flares and the contribution expected by observations of SOLAR-C and MUSE (P. Romano)
17:00	Data formation process and image reconstruction methods for the Spectrometer/Telescope for Imaging X-rays on-board Solar Orbiter (A. Volpara)
17:15	Numerical Simulation Working Group supporting the Plasma Observatory space mission proposal (F. Valentini)

## Venerdì 3 febbraio 2023

### Session chair: M. Piana

**9:30** Scientific Payloads Calibration in the OPSys Facility (L. Zangrilli)

**9:45** Study of 28th September 2021 CME-driven shock: 3D kinematics reconstruction and plasma parameters derivation by using multi-instruments observations" (F. Frassati)

**10:00** (REMOTE) Solar plasma diagnostic with extreme ultraviolet spectroscopy (M. Pelizzo)

**10:15** (REMOTE) An Overview of the Nonthermal Emission of the Nonflaring Sun (E. Orlando)

**10:30** (REMOTE) Temperature inversion in a two-component plasma atmosphere (L. Barbieri)

**10:45** (REMOTE) Ion beams in the expanding solar wind: simulations and observations (L. Matteini)

**11:00 - 11:30** Break

### Session chair: S. Fineschi

**11:30** On the magnetosphere-ionosphere coupling during the May 2021 Geomagnetic storm. (M. Piersanti)

**11:45** Multi-spacecraft Observations of a Large Prominence Eruption and a CME (C. Sasso)

**12:00** Extraction of spectral and thermodynamic properties of an Active Region filament (M. Murabito)

**12:15** Modelling asymmetric nanojets in the solar corona and detecting them with MUSE (P. Pagano)

**12:30** Conclusioni e discussione

**13:30** Chiusura workshop