



ACCADEMIA NAZIONALE DEI LINCEI

CONVEGNO

GEODESY AND PLANETARY SCIENCES: A GEODETIC CONFERENCE FOR GEODESY AND ASTRONOMY AT THE ACCADEMIA DEI LINCEI

13 MAGGIO 2025

Comitato ordinatore: Mattia CRESPI (Linceo, Università la Sapienza), Francesca MATTEUCCI (Lincea, Università di Trieste), Fernando SANSÒ (Linceo, Politecnico di Milano, coordinatore).

PROGRAMMA

Geodesy is one of the oldest “modern” sciences, born together with Mechanics and Astronomy between XVII and XVIII century. We recall that the first empirical proof of Newton’s law, namely the decrease of the gravitational attraction with the squared inverse of the distance, has been of geodetic character, based on a model of the Earth with spherical layers of constant mass density. This is the same law controlling the motion of bodies in the Solar system, if not of the whole Universe, which however requires more advanced physical theories, like General relativity, Astrophysics, to account for its evolution. On the same time the positioning on the Earth surface was taking advantage of the direction of the vertical on the celestial sphere; just think of ancient navigation instruments like the astrolabe. These models and technologies are today superseded by modern tools for the observation of the Earth in particular from the full deployment of e.m. connections between ground stations and satellites. For instance the determination of the dynamics of Earth satellites, under the complicated gravitational pull of the earth gravity field, is nowadays controlled by laser ranging as well as radio-wave phase observations like those of the Global Navigation System (GNSS). The positioning of points on the Earth and the navigation on its surface are again matter of using GNSS observations. Not to be mentioned the possibility of sounding the Earth surface with optical, radar or other e.m. waves at different wavelengths, to derive its physical state, e.g. temperature, humidity of the soil or wind forcing of the ocean. Exactly the same, or similar, methods are used for instance to follow and control planetary space missions, or to determine the presence and state of atmospheres on planets, as well as of their surface. This seems a valid reason for the Accademia dei Lincei to devote one of the recurring Geodetic Days to the exploration of the interface between the two sister sciences: Geodesy and Astronomy.

Martedì 13 maggio

- 9.30 Saluto della Presidenza dell’Accademia Nazionale dei Lincei
- 9.40 Fernando SANSÒ (Linceo, Politecnico di Milano), Giuseppe BIANCO (ASI): *Theory and Practice of Terrestrial and Celestial Reference Systems*
- 10.20 Luciano IESS (Sapienza Università di Roma): *The navigation in the planetary system*
- 10.50 David LUCCHESI (IAPS-INAF): *The scientific challenges of Earth satellites*
- 11.20 Coffee break
- 11.50 Mattia CRESPI (Linceo, Sapienza Università di Roma, Scuola Superiore di Studi Avanzati): *Positioning on the Earth*
- 12.20 Cosimo STALLO (ESA): *Positioning on the Moon*
- 12.50 Intervallo

- 14.00 Francesco BERRILLI (Linco, Università Tor Vergata): *Solar activity and space weather*
- 14.30 Elvira ASTAFYEVA (IPGP-Paris): *Sounding of the Earth Ionosphere*
- 15.00 Cinzia ZUFFADA (NASA Jet Propulsion Laboratory): *The exploration of atmospheres and surfaces of the planets*
- 15.30 Coffee break
- 16.00 Stefano FEDERICO (CNR): *Sounding of the Earth atmosphere*
- 16.30 Paola MALANOTTE (Linco, MIT): *Monitoring the global ocean circulation and properties*
- 17.00 Riccardo LANARI (CNR): *Sounding of the deforming solid Earth surface*

ROMA – PALAZZO CORSINI- VIA DELLA LUNGARA, 10
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Tutte le informazioni per partecipare al convegno sono disponibili su:
<https://www.lincoi.it/it/manifestazioni/geodesy-and-planetary-sciences>

Per partecipare al convegno è necessaria l'iscrizione online
Fino alle ore 10 è possibile l'accesso anche da Lungotevere della Farnesina, 10
I lavori potranno essere seguiti dal pubblico anche in streaming

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