



XI Hotine-Marussi Symposium

Opening

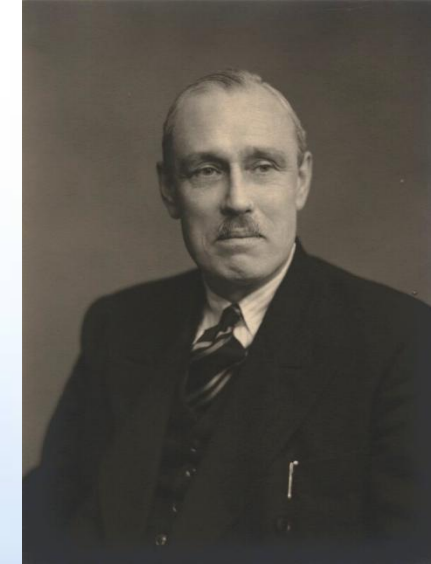
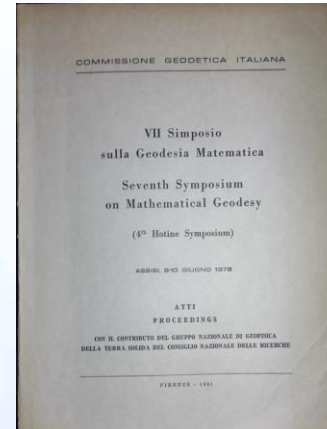
P. Novák, A. Khodabandeh, F. Sansò, M. Crespi

Palazzo della Borsa Valori di Genova – Sala delle Grida
Genoa, 7 September 2026

- A bit of history
- The ICCT – Inter-Commission Committee on Theory and the Hotine-Marussi Symposia
- The **XI** Hotine-Marussi Symposium: Figures and Structures

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- Symposia organized by **Antonio Marussi**
 - 1st Symposium on Three Dimensional Geodesy, Venice, 1959,
 - 2nd Symposium on Three Dimensional Geodesy, Cortina d'Ampezzo, 1962
 - 3rd Symposium on Mathematical Geodesy, Torino, April 1965
- Symposia strongly influenced by **Martin Hotine**
- After Hotine's death in 1968, symposia called
 - 1st Hotine Symposium, Trieste, 1969
 - 2nd Hotine Symposium, Florence, 1972
 - 3rd Hotine Symposium, Siena, 1975
 - 4th Hotine Symposium, Assisi, 1978
 - 5th Hotine Symposium, Como, 1981



Martin Hotine (1898-1968)

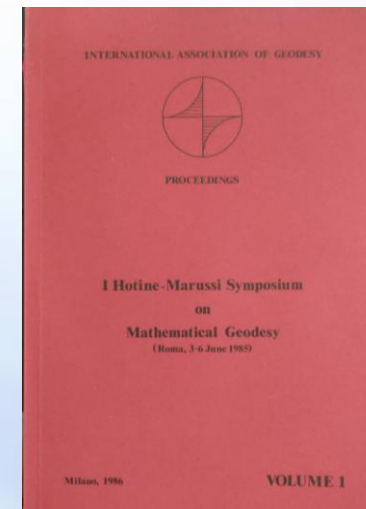
(c) Image National Portrait Gallery

- **After Marussi's death in 1984, the symposia renamed again:**

- 1st Hotine-Marussi Symposium, Rome, 1985
- 2nd Hotine-Marussi Symposium, Pisa, 1989
- **3rd Hotine-Marussi Symposium, L'Aquila, 1994 (1st IAG)**
- 4th Hotine-Marussi Symposium, Trento, 1998
- 5th Hotine-Marussi Symposium, Matera, 2003
- **6th Hotine-Marussi Symposium, Wuhan, 2006 (1st by ICCT)**
- 7th Hotine-Marussi Symposium, Rome, 2009
- 8th Hotine-Marussi Symposium, Rome, 2013
- 9th Hotine-Marussi Symposium, Rome, 2018
- 10th Hotine-Marussi Symposium, Milan, 2022
- **11th H-M Symposium is the 19th Symposium on geodetic theory and methodology**



Antonio Marussi (1908-1984)





IV Hotine Symposium

Assisi 1978

~ 50 participants

(courtesy of Erik Grafarend)

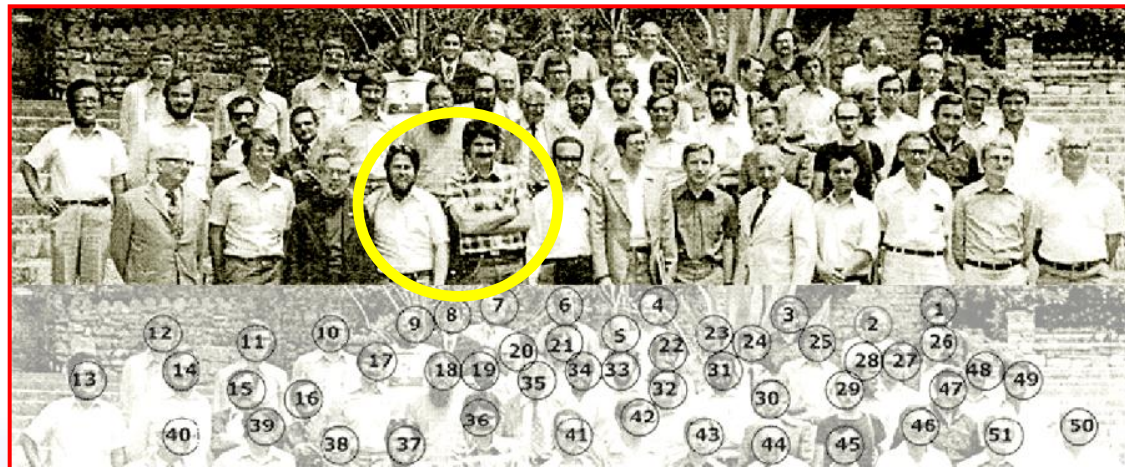
X Hotine-Marussi Symposium

Milan, 2022

~ 70 participants

(courtesy of Riccardo Barzaghi)





IV Hotine Symposium

Assisi 1978

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ICCT – Inter-Commission Committee on Theory



- ICCT was established after the IUGG XXI GA in Sapporo, **2003**, to succeed the former IAG Section IV on General Theory and Methodology
- **ICCT** became a **permanent IAG entity** at the IUGG XXIV GA in Prague, **2015**
- ICCT **interacts and supports other IAG entities** (commissions, services, ICCs, GGOS, projects) and **IUGG commissions** (Mathematical Geophysics), and encourages ties with **“sister” associations** also outside IUGG
 - **bridging the gaps** between entities focused on specialized topics, however requiring well-founded methods
 - **promoting research in theory and methodology**, both motivated by geodetic need and practice and as a genuine contribution to science and engineering
 - bearing in mind the **relevant role always played by geodetic theory** and methods in Earth observation and understanding
 - **attracting young talents to geodesy** and serving as home to all theoretically oriented geodesists as well as to applied mathematicians

Hotine-Marussi Symposia are the **well-established ICCT quadrennial meetings**, which represent the main forum for

- **discussing and assessing theoretical advances**, and delineating future research frontiers in/for geodesy, but not only
- **modernizing legacy problems**, focusing and re-examining still open historical questions in theoretical geodesy benefiting from latest approaches
- **leveraging Big Data**, capitalizing on the continuously increasing availability of geodetic/Earth observation data and advanced data science methods

- **Methodological developments must keep pace with new observing systems and new processing methods**
- **Classical and new physical/mathematical approaches, and new data-driven (AI) methods** must both be parts of this methodological developments, correctly **framed in stochastic theory**, which is a large part of the historical culture of geodesy
- Therefore, for the most fruitful analysis of new Big Data, and the best understanding of the underlying Earth behavior
 - **fundamentals of AI methods** must be understood, for their appropriate usage and scientific control (no AI as a "black box")
 - **AI should not be used to replace** what is well-grounded in classical and new physical/mathematical approaches (no AI as holistic approach, because AI is always a method of purely empirical representation of phenomena)
 - **AI methods could help to fill the unavoidable gaps** between the physical/mathematical models and the real world

- A bit of history
- The ICCT – Inter-Commission Committee on Theory and the Hotine-Marussi Symposia
- **The XI Hotine-Marussi Symposium: Figures and Structure**

- ~ 95 registered participants
- 8 oral sessions with 61 presentations (16 mins, **3 mins Q&A**)
- **White Elephants special session:** *Geodesy: present state and future horizons* (6 invited talks – 25 mins, **4 mins Q&A**)
- *International projects* session (4 presentations – 16 mins, **3 mins Q&A**)
- 2 poster sessions with 20 presentations (~ 2 hours each, **Q&A time**)
- 20 session chairs (and 17 JSJs chairs/vice-chairs) to set up the program
- 32 members of SC and 4 members of LOC
- 9 coffee breaks, social event and conference dinner
- **10-minute Q&A** blocks at the end of morning/afternoon sessions
- **ICCT study group chairs meeting on Thursday lunch**
- closing session summarizing highlights of the Symposium

- S1: Modelling of earth's dynamic – Y. Tanaka, A. Klos
- S2: Geodetic quality/integrity modelling – P. Teunissen, R. Barzaghi
- S3: High-precision GNSS – D. Psychas, B. Federici
- S4: Machine and deep learning in Geodesy – L. Massarweh
- S6: Geodetic reference frames – C. Kotsakis, R. Barzaghi
- S7: Gravitational field modelling – M. Šprlák, Z. Yin, R. Goyal, D. Tsoulis
- S8: International projects – P. Novák, D. Sguerso
- S9: Troposphere and ionosphere – M. Ravanelli, I. Ferrando
- S10: New altimetry missions – L. Rolland, M. Crespi

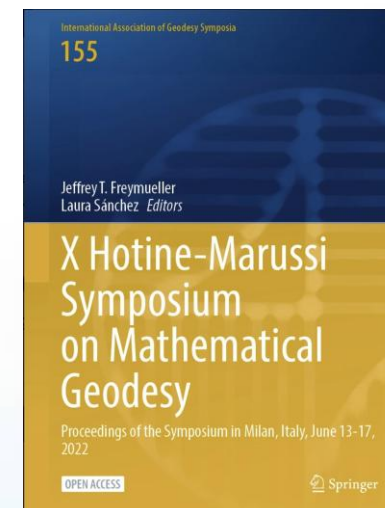
A dedicated session targeting **persistent, foundational methodological issues** and **honoring legacy**

- Broad scientific impact: focuses on **cross-cutting topics** to benefit the entire Earth sciences community
- Tribute: **honors eminent colleagues** who have devoted their careers, passion, and vision to advancing theory and methods in geodesy and Earth sciences

- **Fernando Sansò, Giovanna Venuti**
'New' and 'new-new' results on the convergence problem in collocation theory
- **Athanasios Dermanis**
Kalman filter from the geodetic point of view
- **Peter Teunissen**
When Success Hides the Need to Understand
- **Zuheir Altamimi, Paul Rebischung, Xavier Collilieux**
The International Terrestrial Reference Frame: Past, Present and Future
- **Riccardo Barzaghi**
Geoid and height anomaly: a possible summary on theory and estimation methods
- **Roberto Sabadini**
Integrating Geophysics and Geodesy

- volume in the IAG Symposia Series but electronic only
- articles published online upon acceptance in peer-review process
- authors have free-access to their articles in PDF
- volume closed after accepting the last article
- **deadline for submitting articles – 31 January 2027**
- full name change proposal (to be approved)

XI Hotine-Marussi Symposium on geodetic theory and methodology



Download metrics 2026				
Volume	Publication Year	Access Mode	Total Downloads	Downloads Quartile
X Symposium	2024	Open Access	180.000+	Top Quartile (Q1)
IX Symposium	2021	Hybrid / Paywall	12000+	Second Quartile (Q2)
VIII Symposium	2016	Closed / Paywall	49000+	Third Quartile (Q3)
VII Symposium	2012	Closed / Paywall	94000+	Third Quartile (Q3)

We have **to tribute an old Greek Friend** twice, for

- the word **styling and inspiring our event**, Συμπόσιον
- a reflection – thoughtfully suggested by Fernando Sansò – summarizing **why *symposia* are necessary for science**

*the deepest and most important knowledge can only be grasped devoting a
long time discussing with friends (Συνουσία) pursuing the same goal;
only **after immense effort**, understanding **suddenly flashes forth***

Plato, VII Letter to Athenians



Memory of colleagues and friends who left us ...



- Oscar Lucas Colombo (1942-2024)
- Bernard Chovitz (1922-2025)
- Angus Hamilton (1922-2023)
- Helmut Moritz (1933-2022)
- Ivan I. Mueller (1930-2023)
- Byron D. Tapley (1933-2026)
- Gladys West (1930-2026)

My profound gratitude goes to
University of Genoa colleagues
Bianca, Ilaria, Paola, Domenico and
their whole wonderful team!

We wish you
a very nice and fruitful Symposium,
in the true spirit of Hotine-Marussi!

Have a great time in Genoa!

«Une des plus belles choses qu'on
puisse voir au monde: Gênes, de la
haute mer»

«One of the most beautiful sights one
can behold in the world: Genoa, from
the open sea»

Guy de Maupassant

