



**International Association  
of Geodesy**

# Newsletter

## October 2022

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The *IAG Newsletter* is under the editorial responsibility of the *Communication and Outreach Branch (COB)* of the IAG.

It is an open forum and contributors are welcome to send material (preferably in electronic form) to the IAG COB. These contributions should complement information sent by IAG officials or by IAG symposia organizers (reports and announcements). The *IAG Newsletter* is published monthly. It is available in different formats from the IAG new internet site: <http://www.iag-aig.org>

Each *IAG Newsletter* includes several of the following topics:

- I. news from the Bureau Members
- II. general information
- III. reports of IAG symposia
- IV. reports by commissions, special commissions or study groups
- V. symposia announcements
- VI. book reviews
- VII. fast bibliography

## General Announcement

### *Call for Nominations for IAG Officers (2023-2027)*

Nominating Committee  
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30 June 2022

IAG Council Delegates, IAG Officers, IAG Fellows, IAG Individual Members

Dear colleagues:

As you are aware, the elections of IAG Officers for the period 2023-2027 shall take place by electronic vote before the 2023 IAG General Assembly in Berlin, Germany. The procedures for nominations and elections of Officers are given in section 39 of the IAG By-Laws. According to the IAG Statutes, Section 12, the voting members of the IAG Executive Committee that are to be elected are the following:

- President,
- Vice-President,
- Secretary General,
- Presidents of Commissions (4),
- Service representatives (3),
- Members-at-large (2), and the
- President of the Communication and Outreach Branch.
- Their eligibility and terms of office are outlined in section 40 of the IAG By-Laws.
- The Nominating Committee is inviting you to submit nominations as follows:

Submit nominations for all Officer positions listed above, except for the Service representatives who will be submitted by the Services.

All nominations should be submitted to me, electronically or by regular mail, to the address given at the end of this letter.

#### **The deadline to submit nominations is extended to 8 November 2022.**

Based on the nominations received, the Nomination Committee will prepare a list of candidates for each position to be filled (normally two candidates per position) and will send it to the eligible voters and nominators: IAG Council Delegates, the IAG Officers, and those IAG Fellows and Individual members who took part in the nomination process by March 2023. New nominations could be added to the list of candidates, provided they are supported by at least two IAG Council Delegates by April 2023. In April 2023 the final list of candidates will be sent out to the IAG Council Delegates for election. The result of the elections will be announced by May 2023.

The election of the two Members-at-large will be a two-step process. Candidates for the two positions will be determined after the elections for all other members of the Executive Committee have been completed. In order to ensure better geographic diversity of the IAG Officers, the slate of candidates for the positions of Members-at-large will be compiled in May 2023.

This slate will then be presented to the eligible voters, and the results of the second round of elections will be announced in June 2023.

For any questions or concerns, please feel free to contact either me, or any of the other members of the Nominating Committee listed at the top of this letter.

I am looking forward to receiving your nominations and I thank you in advance for your prompt attention to this matter.

Yours truly,

Prof. Harald Schuh  
Chair of the IAG Nominating Committee  
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## Reports

### ***X. Hotine-Marussi Symposium on Mathematical Geodesy***

*13-17 June 2022, Milan, Italy*

The Hotine-Marussi Symposia on Mathematical Geodesy represent an important venue for theoretically oriented geodesists. Their tradition began in 1959 when Antonio Marussi organized the first symposium on mathematical geodesy in Venice, Italy. First symposia were heavily influenced by Martine Hotine and after his death in 1968, they started to be called after him. After Marussi's death in 1984, the symposia were renamed once more. Since 2006, the Inter-Commission Committee on Theory (ICCT, <http://icct/kma.zcu.cz>) of the IAG has been responsible for their organization.

The jubilee X. Hotine-Marussi Symposium on Mathematical Geodesy was held from 13 to 17 June 2022. In total, it was already the 18th Symposium on Mathematical Geodesy organized since 1959. The symposium, held at the Politecnico di Milano, was attended by 60 participants who contributed 80 papers (62 oral presentations and 18 posters) focused on recent developments in geodetic theory.

The scientific program of the symposium was organized in 10 regular sessions thematically modelled according to the topics of the ICCT study groups and often convened by their chairs:

1. Advanced numerical methods in geodesy (R. Čunderlík, Z. Minarechová)
2. Theory of geodetic reference frames and Earth's rotation (Z. Altamimi)
3. Theory of multi-GNSS parameter estimation (A. Khodabandeh)
4. Multi-sensor and time series data analysis (A. Klos, K. Sošnica)
5. Theory of global gravity field modelling (M. Reguzzoni, M. Šprlák)
6. Probing Earth's inner structure using geodetic methods (D. Sampietro, R. Tenzer)
7. Theoretical aspects of heights and height systems (R. Barzaghi)
8. Estimation theory and stochastic modelling (P. Teunissen)
9. Geodetic methods in Earth system science (M. Crespi, N. Sneeuw)
10. Theory of local gravity field modelling (H. Abd-Elmotaal, J. Huang)

Additionally, a special session was held on 15 June 2022. Its program consisted of 5 invited talks focused on the two basic concepts of physical geodesy – geoid and quasigeoid:

- Sansò F, Barzaghi R, Reguzzoni M: Molodensky's and Helmert's theories – two equivalent geodetic approaches to the determination of the gravity potential
- Sideris MG, Sansò F: The equivalence of the linearized original and 'Helmertised' geodetic boundary value problems of Stokes and Molodensky
- Sjöberg LE: Geoid or quasigeoid? – a short comparison
- Kingdon R, Vaníček P, Santos M, Sheng M, Foroughi I: The quasigeoid: why Molodensky heights fail
- Huang J, Wang Y: Numerical aspects of local and regional geoid and quasi-geoid determination

As an important outcome of the debate on the geoid and quasigeoid was a motion proposed to the Assembly of the X. Hotine-Marussi Symposium which recommended the quasigeoid should not be used as a reference surface

for geodetic heights in scientific as well as engineering applications. The Assembly recommended discussing this proposal with leading experts in the field and possibly proposing a resolution to the IAG Assembly 2023.

The symposium was organized as a classic meeting with on-site participation; however, due to pandemic restrictions, a limited number of presentations were provided using online tools. Although the number of participants did not match the numbers of previous Hotine-Marussi symposia, the meeting was attended by numerous geodesists, both young and senior ones, who greatly contributed to its success.

The X. Hotine-Marussi Symposium was also a success thanks to the efforts and organizational skills of the local organizing committee chaired by Riccardo Barzaghi (Politecnico di Milano).

The scientific program of the symposium was complemented by a social program including a tour of the Dome (Cathedral) and Centro Storico (Historic Center) di Milano.

For more information on the X Hotine-Marussi Symposium, please visit the following website:

<https://www.hotinemarussi2022.polimi.it/>.



Participants of the X. Hotine-Marussi Symposium, 15 June 2022, Politecnico di Milano, Italy.

Pavel Novák  
President of the IAG Inter-Commission Committee on Theory

## Meeting Announcements

### *Meetings Calendar*

#### **IAG Sponsored Meetings**

##### **IDS Workshop 2022**

*October 31 – November 2, 2022, Venice, Italy*

URL: <https://idsworkshop.aviso.altimetry.fr/index.html>

##### **SIRGAS 2022**

*November 7 – 9, 2022, Santiago de Chile, Chile*

URL: <https://sirgas.ipgh.org/simposio/en/home-2/>

##### **22nd International Workshop on Laser Ranging**

*November 7 – 11, 2022, Yebes, Spain*

URL: <https://congreso-yebes.ign.es/>

##### **GGOS Days 2022**

*November 14 – 16, 2022, Munich, Germany*

URL: <https://ggos.org/event/ggos-days-2022/>

##### **EUREF Symposium 2023**

*May 22 – 26, 2023, Gothenburg, Sweden*

URL: [http://www.euref.eu/euref\\_symposia.html](http://www.euref.eu/euref_symposia.html)

##### **IUGG Berlin 2023**

*July 11 – 20, 2023, Berlin, Germany*

URL: <https://www.iugg2023berlin.org/>

## Obituary

### *Helmut Moritz (1933 - 2022)*



With profound sadness we have taken notice of the death of a brilliant scientist and highly gifted academic teacher: Helmut Moritz, who passed away on October 21, 2022 at the age of 89.

Born on November 1, 1933 in Graz, Austria, Helmut Moritz attended the Academic high school in Graz. He lost his father during World War II, and as a consequence he grew up under very difficult circumstances. His high aptitude in general and his strong interest in mathematics, natural sciences, music and languages in particular became obvious already during his high school time. In 1956 he completed his study of surveying and geodesy at the University of Technology in Graz, followed by a PhD study which he completed in 1959. For his excellent performance and the outstanding quality of his PhD thesis „*Theory of errors in the function space*“ he was awarded the doctor’s degree by the President of the Republic of Austria – a top honor for an exceptional academic performance in Austria. In his thesis he introduced for the first time the infinite-dimensional Hilbert space into geodesy. In the same year he got married with his beloved Gerlinde, who gave birth to two children, Berta (1960) and Albrecht (1962).

After a three years employment at the Federal Bureau for Metrology and Surveying in Austria he received in 1962 an invitation by the Department of Geodetic Science of the Ohio State University, at that time the undisputed center of geodesy under the chairmanship of Weikko A. Heiskanen. Together with Heiskanen he wrote his first scientific book which became a bestseller in theoretical geodesy, which was translated into several foreign languages and is still up-to-date after more than 50 years: „*Physical Geodesy*“.

Shortly after his return from Columbus to Graz in 1964 he became appointed as an Associate Professor at the University of Hannover and in the same year he was offered the full professor position by the Technical University of Berlin. During this period of time he had devoted himself very intensively to research regarding the problem of Molodensky.

And suddenly, during the hot phase of the student revolution in 1968, he received an invitation by the Graz University of Technology, however, Helmut Moritz preferred to stay in Berlin and rejected the appointment thankfully. A few years later, in 1971 he was again approached by Graz University of Technology to become full professor for Physical Geodesy. This time he could no longer resist and accepted the invitation. And his time in Graz should become a very long and extremely fruitful professional phase of more than 30 years. In his early phase in Graz his research activities had been focused on „*Least squares collocation*“ – a newly developed adjustment technique in Hilbert space which had actually two scientific fathers: Helmut Moritz and Torben Krarup.

Helmut Moritz, a young and very dynamic professor in Graz - an outstanding scientist who had literally written the book of theoretical geodesy from scratch – the news went quickly public. The student community was enthusiastic and loved to attend lectures by Helmut Moritz. He had always been very devoted to his subject and had been carefully listening to his students, to their problems and also to their interests. His exceptional talent of explaining even very complex matters in an easily „digestible“ way has made him a highly appreciated academic teacher. In his lectures he had always followed the recommendation of Albert Einstein, that one should make things as simple as possible, but not simpler. Yes, simplicity is indeed a result of maturity.

His many years in Graz became probably the most intensive time in his life, scientifically, of course, but also in terms of his strongly growing international profile which could also be observed in his institute and its very international atmosphere. He himself considered the decade from 1975 – 1985 as the most interesting and creative in his entire life. During this time and the consecutive years he had published numerous scientific contributions regarding the geodetic boundary value, the Earth’s rotation and the theory of nutation and polar motion, to relativistic effects in reference frames, to satellite gradiometry, and the realization of the Geodetic Reference System 1980. „*Least squares collocation*“ was further extended and developed in all its details, and became an exceptionally powerful and worldwide applied tool in physical geodesy. And it was once again Helmut Moritz, who had compiled and carefully structured the mathematical and statistical foundation of

collocation in all its facets in his fundamental book „*Advanced Physical Geodesy*“. Jointly with Ivan I. Mueller he wrote the extensive volume „*Earth Rotation: Theory and Observation*“. His book „*Geometry, Relativity, Geodesy*“, jointly written with B. Hofmann-Wellenhof, may be considered a beautiful sort of bridge building, starting from the curved surface, known to every contemporary geodesist, towards the curved space, and his volume „*Science, Mind and the Universe*“ can be understood as a demanding journey into the vast dimensions of our universe, and its reflection by our human mind, enriched by a glimpse on the special and general theory of relativity and quantum physics. And finally, a strong international demand for a revised new edition of his fundamental early book „*Physical Geodesy*“, now jointly with B. Hofmann-Wellenhof, closed the circle of his scientific volumes in a very harmonic way.

In 2002 when he retired from his professor position at Graz University of Technology Helmut Moritz was very hardly hit by a personal tragedy: the sudden death of his beloved spouse Gerlinde, who was not just a wonderful partner of life and a strong retaining clip for the entire family, but also an adviser to her husband and a sparring partner in scientific matters. This personal break in his life was followed by his strong inclination towards philosophy of natural sciences, to philosophy and religion, up to metamathematics and metabiology. In total his scientific oeuvre comprises more than 230 scientific contributions and 9 scientific books, many of them translated into several languages.

Parallel to his enormous activities in writing scientific articles and books, Helmut Moritz has also been consequently climbing the stepladder of functions in scientific bodies, literally from his Berlin period on. Starting with the chair of the German and, several years later, the Austrian Geodetic Commission, followed by the chair of an IAG Study Group, the section President of IAG, the IAG Vice President and then IAG President, followed by the big step to the position as the IUGG President, and finally the Bureau member of IUGG, the International Council of Scientific Unions as his culmination point – a three decades long most impressive climb – a storybook career of highest possible level! And as a kind of rounding off of his scientific profile he was appointed as President of the International League of Humanists in Sarajevo and in parallel Director General of the Inter-University Centre in Dubrovnik, positions which he was holding until 2006.

Some colleagues were wondering, if his series of exceptional and ever increasing international positions could be logically followed by comparable local positions within the university. As a consequence Helmut Moritz had been invited several times to become Dean of the University. All these invitations were rejected by him, thankfully and immediately with the argument that he prefers foreign politics over the handling of interior affairs. In his consequent way he always remembered the recommendation of Euripides: „*You are saying that the throne is attractive? For a wise man not at all!*“ (The author of this obituary can - from his own experience - very well understand Helmut Moritz' firm position in this matter: it is very wise indeed. Think how much theoretical geodesy would have missed with Helmut Moritz as a Dean, let away as a University President!)

Without any doubts Helmut Moritz was a scientific genius. But his scientific talent was also balanced by another outstanding talent; languages. To have a reasonable command of Greek and Latin as a student at a humanistic high school was considered quite normal at that time, and English was usually considered to be learned „on the job“. But in the course of his life Helmut Moritz made it to as many as 14 (!) languages, which he practiced regularly by conversation with native speakers – hard to believe, but true!. And during the last years of his long life he has even studied Hebrew and Arabic – for reasons of curiosity, as he argued!

Particularly gifted scientists often develop a personal inclination to music and literature. This is also true for Helmut Moritz: playing piano was his hobby already as a high school student and remained so for all his life. He particularly loved the weekly „training sessions“ with Sir Prof. Karl Haidmayer, a composer with international profile and a good friend of Helmut Moritz. Inspired by W.A. Mozart, who considered an organ as the „queen of all instruments“, Helmut Moritz took up this challenge and learned to play organ. Quite often one could listen him playing organ in his community church. Helmut Moritz was also particularly well-versed in literature. His interests were equally broad as they were deep-going. But it is was particularly Adalbert Stifter, who was most appreciated by him.

It goes without saying that a career of highest level combined with such an impressive dimension cannot remain unnoticed. As a consequence, Helmut Moritz became a strongly requested person, honoured by top international recognitions and awards: the Gauß-Medal, the Alexander-von-Humboldt-Medal and the Kopernikus-Medal, just to name a few particularly outstanding recognitions among numerous others. Worldwide scientific Academies became very much interested in having Helmut Moritz in their „hall of fame“, and Helmut Moritz contributed scientifically as well as strategically to the academic life of many academies and their development. To make a long story short: Helmut Moritz became member of as many as 15 (!) scientific Academies worldwide.

Three universities with highest international reputation had honored Helmut Moritz with an honorary doctorate for his outstanding scientific achievements in theoretical geodesy: The Technical University Munich, the Ohio State University in Columbus/Ohio and MIIGAIK, the Geodetic University in Moskau. And also the Wuhan University of Technology awarded an honorary professor position to him in recognition of his great scientific achievements and his continuous support of the Chinese geodetic community.

Top-class scientists are often accompanied by particularly sympathetic and supportive partners, and are sometimes even borne by their family. This was absolutely true for his beloved spouse Gerlinde as well as for his

daughter Berta and his son Albrecht. Within his extended family, in terms of his co-workers and colleagues, Helmut Moritz found not just admiration, but much more a warm and beneficial embedding which he appreciated and which he very much deserved.

In this way we say goodbye to Helmut Moritz, to an exceptional personality, who was both a particularly gifted scientist and at the same time a very modest person with humor and also with a firm determination - a wonderful friend who was always committed to excellence.

Thank you, Prof. Moritz, for all what you have done for science and for our community at large.

Hans Sünkel

Graz, im Oktober 2022