

2nd IAG Commission 4 Symposium “Positioning and Applications” - report



PART 1: LOCAL ORGANISATION

The Local Organization was carried out by Robert Heinkelmann & Anja Böhmer, GFZ Potsdam, together with Harald Schuh and Mahdi Alizadeh of the SGI (Space Geodesy and Ionosphere) Workshop Team¹ of Technische Universität Berlin and of K.N. Toosi University of Technology, Tehran, Iran.

The Symposium was originally planned and organized for September 2020. Due to the pandemic, it was delayed and finally held from September 5th to 8th, 2022, in Potsdam, at Wissenschaftsetage Potsdam, proWissen Potsdam e. V. - WIS im Bildungsforum. Am Kanal 47. 14467 Potsdam, Germany. The Symposium website² was created by Copernicus Gesellschaft mbH³. It will be available at least for a five-year timeframe.

Besides at site participation, it was also possible to take part online. We would like to point out that we received very well feedback concerning the hybrid format. Many participants mentioned that without the online option it would not have been possible for them to take part. Hence, the hybridity of the Symposium significantly fostered its inclusive character.

All together, we registered 74 participants, of which 28 were taking part remotely and 46 met at site. Among the registered, we had 14 students and six IAG Members, who received the obligatory 10% discount for registration.

14 of the 74 participants were female and 60 chose male for their gender (Fig. 1).

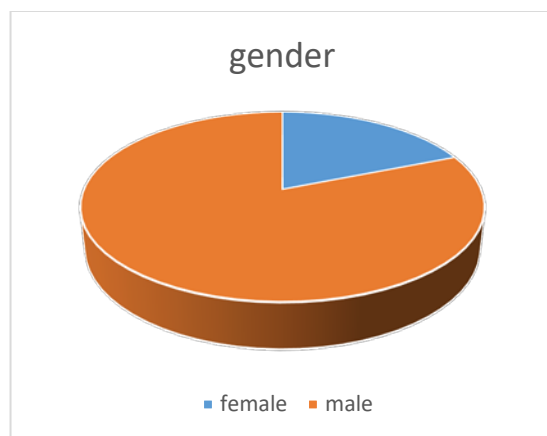


Fig. 1 Participation by gender

¹ <https://misc.gis.tu-berlin.de/SGI2019/>

² <https://www.iag-commission4-symposium2022.net/>

³ <https://www.copernicus.org>



We can conclude that it was a good idea to foster female scientists and female early career scientists with dedicated funding, as without the specific funding of these minorities the gender inequality might have been even more unbalanced.

The participants came from 22 countries, the majority from Germany, but also from Australia, P.R. China, Taiwan, Saudi Arabia, USA, Canada, Iran, Turkey, South Africa, Algeria, Brazil and several European countries: Greece, Poland, Switzerland, Austria, Belgium, Czech Rep., Denmark, Finland, Italy and Spain (Fig. 2).

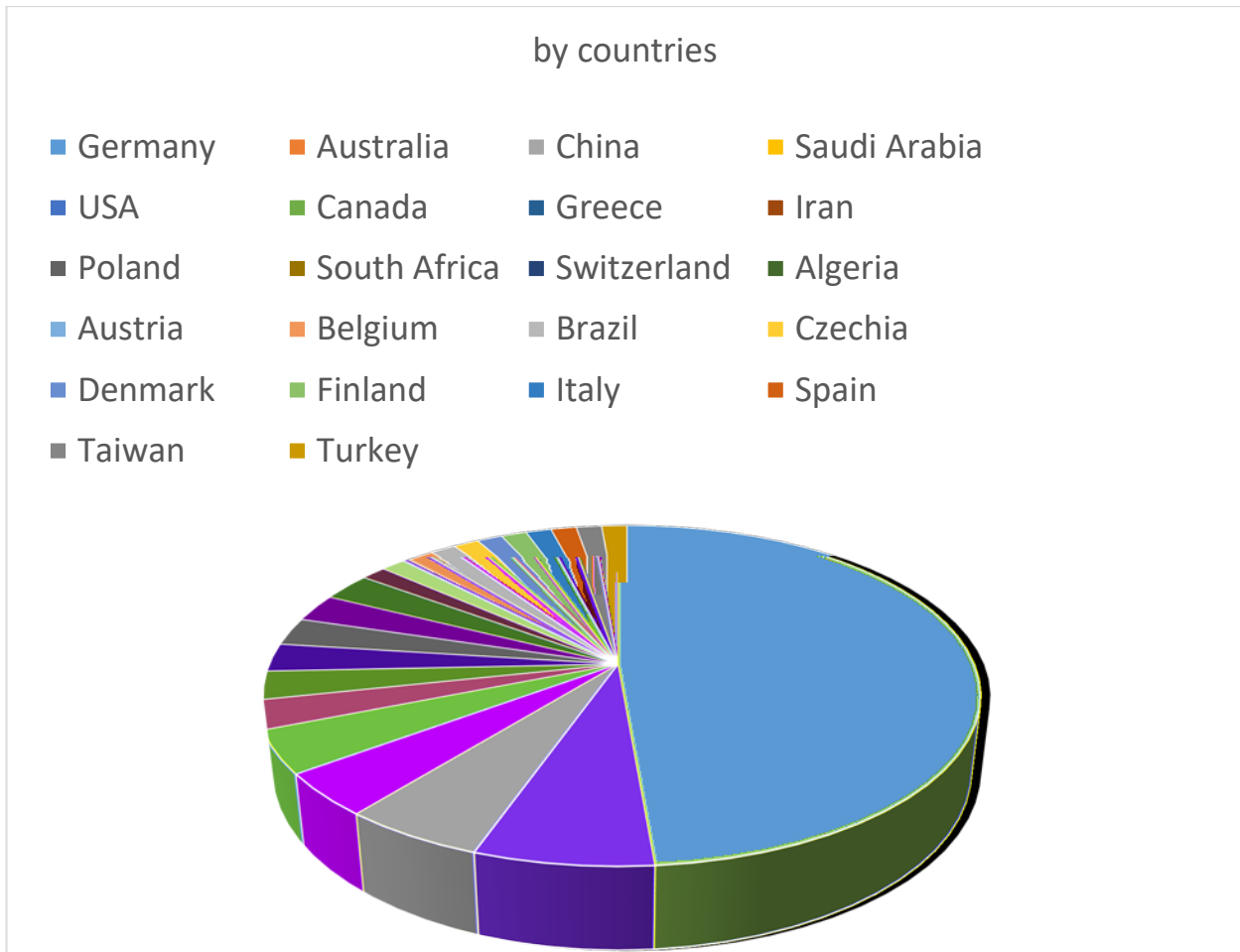


Fig. 2 Participants by country

We regret that in one case we were not able to issue all information and documents early enough to receive a visa for Germany in time. The affected person had to take part online instead.

PART 2: SCIENTIFIC ORGANISATION

The scientific program included nine sessions. Some of which were arranged according to the IAG Commission 4 structure

- Emerging Positioning Technologies and GNSS Augmentation (SC4.1)
- Multi-frequency multi-constellation GNSS (SC4.2)
- Atmospheric Remote Sensing of the troposphere (SC4.3) and GNSS reflectometry
- GNSS integrity and quality control (SC4.4)

and some of which were dedicated to the special focus topics of the Symposium, namely

- Atmospheric Remote Sensing of the ionosphere
- IAG GGOS Focus Area Geodetic Space Weather Research.

51 orals and seven posters were presented within these sessions. We decided to accept presentation slides and posters as part of the open access Symposium Proceedings at zenodo⁴.

Apart from these scientific sessions, we held opening and closing sessions and a Special Session with a video presentation. Our delegates organized an IAG Sub-Commission 4.3 Splinter Meeting, a Business Meeting of IAG Commission 4 and an IAG + IAGA (International Association of Geomagnetism and Aeronomy) Splinter Meeting on the specific topic of “Space Weather Research”.

Various scientific bodies took part in the organization of this Symposium. Besides IAG Commission 4, the IAG GGOS Focus Area „Geodetic Space Weather Research“ (FA-GSWR) and the Interdivisional Commission on Space Weather of IAGA, we had IGS and ION as organizers on board.

The chairs, Michael Schmidt (DGFI-TUM, Munich) and Ehsan Forootan (Aalborg University, Denmark), of the FA-GSWR, and some colleagues from IAGA discussed in the before mentioned IAG + IAGA Splinter Meeting how to establish a joint interassociation study group on space weather topics within the IUGG. Since there are already examples of this type of joint study group within the IAG, we planned to create a list of objectives for such a joint interassociation study group that would combine the activities of IAG and IAGA. A further discussion is planned for the next IUGG General Assembly, which will be held in Berlin, Germany, July 11-20, 2023. One of the goals of such a study group will be to develop a roadmap for the establishment of international space weather data centers and space weather services for scientific purposes. While space weather services, including warning systems for the public, must be installed by the governments of countries such as Germany, i.e., they are national institutions, the question here, for example, is how measurements from different scientific fields such as geodesy and solar physics can be combined to enable reliable prediction of space weather events. To solve these and other problems in space weather research, it is necessary to form an international team that brings together as much experience as possible. The 2nd IAG Commission 4 Symposium was therefore an ideal platform to launch this initiative.

The establishment of such a joint inter-association study group is one of the expected outcomes of the second IAG Commission 4 symposium, increasing the geodetic and other communities' awareness of space weather and its impact on modern society.

⁴ <https://zenodo.org/communities/iag-comm4-symp-2022/>

2nd IAG Commission 4 Symposium “Positioning and Applications” – Annex 1 - Financial Report

According to the proposal and the IUGG terms of reference, we made use of the budget kindly granted to us by IUGG in the following way (Tab. 1).

Tab. 1 Financial processing; all prizes are indicated in Euro incl. taxes unless otherwise stated.

category	name	item	amount	original currency	EUR equivalent	sum EUR	type of transfer
invited	Murat Durmaz	registration	510		510		
		abstract	40		40		
		flight	6850,26	TRL	377		
		hotel	700		700	1,627	transfer wise
	Manuel Hernandez-Pajares	registration	510		510		
		abstract	40		40		
		flight	439		439		
		hotel	480		480	1,469	SEPA
	Lung-Chih Tsai	registration	510		510		
		abstract	40		40		
		flight	87856	TWD	2,812		
		hotel	726		726	4,088	int.
	Claudia Borries	registration	510		510		
		abstract	40		40		
		train	15,95		16	566	SEPA
	Jens Wickert	registration	510		510	510	SEPA
	Ayomide Olabode	registration	345		345		
		abstract	80		80	425	SEPA
	Artem Smirnov	registration	345		345		
		abstract	40		40	385	SEPA
	Milad Asgarimehr	registration	510		510		
		abstract	40		40	550	SEPA
	Leo Martire	registration	100		100		
		abstract	40		40	140	transfer wise
	Pierre Cilliers	registration	100		100		
		abstract	40		40	140	transfer wise
	Stefan Lotz	registration	100		100	100	transfer wise

	Naser El Sheimy	registration	100		100		
		abstract	40		40	140	transfer wise
	Ankur Kepkar	registration	100		100		
		abstract	40		40	140	SEPA
	Jungang Wang	registration	510		510		
		abstract	40		40	550	SEPA
	Mainul Hoque	registration	510		510		
		abstract	40		40	550	SEPA
invited	total					11,380	
developing country	Mahdi Alizadeh	registration	510		510		
		abstract	40		40	550	SEPA
developing country	total					550	
female early career	Rozhin Moftizadeh	registration	510		510		
		abstract	40		40		
		train	66		66		
		hotel	376		376	992	transfer wise
	Susanne Beer	registration	510		510		
		abstract	40		40	550	SEPA
	Qianwen Lin	registration	345		345		
		abstract	40		40	385	SEPA
	Karina Wilgan	registration	510		510		
		abstract	40		40	550	SEPA
	Nhung Le	registration	100		100		
		abstract	40		40	140	SEPA
	Yushan Zhang	registration	100		100		
		abstract	40		40	140	SEPA
female early career	total					2,757	
student	Michael Bako	registration	345		345		
		abstract	40		40	385	

	Yannick Brea	registration	345		345		
		abstract	40		40	385	
	Bobin Cui	registration	345		345		
		abstract	40		40	385	
	Ali Hasan Dogan	registration	345		345	345	
	Shengpin He	registration	345		345		
		abstract	40		40	385	
	Ali Karimidoona	registration	345		345		
		abstract	40		40	385	
	Chaiyaporn Kitpracha	registration	345		345	345	
	Liangwei Nie	registration	345		345		
		abstract	40		40	385	
	Patrick Schreiner	registration	345		345		
		abstract	40		40	385	
	Longjang Tang	registration	345		345		
		abstract	40		40	385	
	Alireza Atabati	registration	345		345		
		abstract	40		40	385	
student	total					4,155	
female scientist	Galina Dick	registration	510		510		
		abstract	40		40	550	
	Allison Kealy	registration	100		100		
		abstract	40		40	140	
	Haixia Lyu	registration	100		100	100	
female scientist	total					790	
total expenses	total					19,632	
IUGG in	total		20,000	USD	19,872	19,872	
difference	"-" transfer to IUGG					- 240	
	"+" higher payout					0	

Robert Heinkelmann on behalf of LOC and IUGG Funding Organizer