Name and surname:	**Krzysztof Sośnica**
Academic Degree:	prof. dr hab. inż. (Prof.)
Institute/Department:	Institute of Geodesy and Geoinformatics
e-mail address:	krzysztof.sosnica@upwr.edu.pl
ORCID:	0000-0001-6181-1307
UPWr Base of Knowledge - link:	https://bazawiedzy.upwr.edu.pl/info.seam?id=UPWrbd14633e36ae4108a4aefde1c1e25350&affil=&lang=pl
Researchgate:	https://www.researchgate.net/profile/Krzysztof-Sosnica
Personal website / Working group website:	http://www.igig.up.wroc.pl/igg/
Participation in projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	EArth's Gravity fieLd Evolution (EAGLE) PI: prof. dr hab. inż. Krzysztof Sośnica Number (MSHE code): UMO-2021/42/E/ST10/00020 Duration: 1.07.2022 - 30.06.2027 Multi-GNSS Precise Point Positioning with stochastic clock modeling PI: prof. dr hab. inż. Krzysztof Sośnica Number (MSHE code): UMO-2021/43/O/ST10/00096 Duration: 1.10.2022 - 30.09.2027 Fundamental techniques, models and algorithms for a Lunar Radio Navigation system PI: prof. dr hab. inż. Krzysztof Sośnica (UPWr) Number (MSHE code): European Space Agency, ESA AO/1-10712/21/NL/CRS Duration: 7.10.2021 - 7.04.2023 Integrated terrestrial reference frames based on SLR measurements to geodetic, active LEO, and GNSS satellites PI: prof. dr hab. inż. Krzysztof Sośnica Number (MSHE code): National Science Center, UMO-2019/35/B/ST10/00515 Duration: 18.06.2020 - 17.06.2024 Determination of Global Geodetic Parameters using the Galileo Satellite System PI: prof. dr hab. inż. Krzysztof Sośnica Number (MSHE code): National Science Center, UMO-2018/29/B/ST10/00382 Duration: 2.01.2019 - 1.01.2022 General Relativistic Effects in the orbits of Galileo Satellites PI: dr hab. inż. Krzysztof Sośnica, prof. uczelni Number (MSHE code): European Space Agency, ESA Contract No. 4000130481/20/ES/CM Duration: 1.04.2020 - 1.03.2021 Innovative Methods of the Troposphere Delay Modeling for Satellite Laser Ranging Observations
PhD topic:	Analysis of the interactions between three pillars of space geodesy: gravity, geometry, and rotation with geophysical interpretations
Research discipline in Doctoral School:	Civil Engineering, Geodesy and Transport
Short description of the research problem to be solved in the PhD (minimum 1000 characters):	Space geodetic parameters can be classified into three main pillars: Earth's gravity field, rotation and its variability, as well as the geometry of the figure Earth. Various geodetic techniques can be employed for the recovery of the parameters belonging to three pillars. The goal of this study is to derive the time series of geodetic parameters using various space geodetic techniques, such as Global Navigation Satellite Systems (GNSS), Satellite Laser Ranging (SLR), Very Long Baseline Interferometry (VLBI), and Doppler Orbitography and Radiopositioning Integrated by Satellite (DORIS) and to compare the time series of derived parameters to geophysical models describing changes in the land hydrology, oceans, atmosphere, ice coverage, and solid Earth. Of particular interest are the parameters that describe the interactions between different space geodetic pillars, e.g., the geocenter coordinates provide the position of the origin of the reference frames (geometry), as well as describe the degree-1 gravity field coefficients (gravity); the polar motion (rotation) is excited by the degree-2 gravity spherical harmonics of Earth's potential (gravity); length-of-day excess (rotation) directly depends on changes in the Earth's oblateness (gravity) that describes the dynamic flattering of the Earth's figure (geometry). In the framework of this study, the geodetic parameters shall be derived for the long period of GNSS, SLR, VLBI, and DORIS solutions using the reprocessed time series. The inverse methods will be used for the recovery of the time series of geocenter coordinates and low-degree gravity field coefficients which will be compared to geophysical models, polar motion excitation, length-of-day variations, and other classical and novel methods of deriving the space geodetic parameters. The system-specific errors, such as draconitic years and the satellite-specific aliasing effects should be extracted from each technique with the evaluation of the sensitivity and limitation of using space geodetic techniques to the recovery of geodetic parameters.
Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques, minimum 500 characters):	Completed master's studies in the field of engineering and technical sciences or exact and natural sciences, e.g. geodesy, computer science, physics, mathematics, astronomy, space and satellite engineering or a related discipline, Proficiency in programming in a selected language (e.g. C ++, Perl, Fortran, Python), Experience in advanced data analysis or numerical modeling (confirmed by scientific articles or thesis), Scientific achievements, including publications or speeches at scientific conferences, will be an additional advantage, Fluency in English (spoken and written), Ability to work independently in a defined time regime, to present complex results in international forms in a concise and accessible way.

a) Project title:	EArth's Gravity fieLd Evolution (EAGLE)
b) Agreement number:	UMO-2021/42/E/ST10/00020
c) Number of months in the project to support PhD (in months; starting from 1st of October 2022):	28
Project website:	https://www.ncn.gov.pl/sites/default/files/listy-rankingowe/2021-06-15poaz12/streszczenia/530131-pl.pdf