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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/
Projects in last 5 years (chronological; with distinction into PI (kierownik) and RF (wykonawca)):	<p>Theme: 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</p> <p>Theme: 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</p> <p>Theme: General Relativistic Effects in the orbits of Galileo Satellites Project manager: dr hab. inż. Krzysztof Sośnica, prof. uczelni PI: European Space Agency, ESA Contract No. 4000130481/20/ES/CM Duration: 1.04.2020 - 1.03.2021</p> <p>Theme: Innovative Methods of the Troposphere Delay Modeling for Satellite Laser Ranging Observations PI: prof. dr hab. inż. Krzysztof Sośnica Number (MSHE code): National Science Center, UMO-2015/17/B/ST10/03108 Duration: 15.02.2016 - 14.02.2020</p>
Research topic and funding	
1) PhD topic:	Modeling precise GNSS clocks for time transfer and future geodetic reference frames
2) Research discipline in Doctoral School	Civil Engineering and Transport
3) Short description of the research problem to be solved in the PhD:	<p>New satellites of the Global Navigation Satellite Systems (GNSS), such as the US GPS, Russian GLONASS, European Galileo, and Chinese BeiDou-2/3 are equipped with high-precision and ultra-stable clocks. The stability of the onboard clocks is of fundamental importance for the positioning, navigation and timing. The radial orbit component of GNSS orbits is strongly correlated with satellite clocks. Therefore, all errors in orbit modeling affect the determination of clock readings.</p> <p>The goal of this thesis is to improve the onboard GNSS clock determination by using zero-difference GNSS solutions. Moreover, the possibility of stabilizing the onboard clocks using Satellite Laser Ranging (SLR) data, especially to Galileo and BeiDou-3 shall be exploited.</p> <p>The Wrocław University of Environmental and Life Sciences, Institute of Geodesy and Geoinformatics establishes a fiber optical link to the Astrogeodynamical Observatory in Borowiec belonging to the Center for Space Research of the Polish Academy of Sciences. The link will allow for connecting the GNSS station in Wrocław to cesium fountain and the active hydrogen masers in Borowiec. All GNSS positioning benefits of the atomic clock connection will be exploited within the topic of this thesis, as well.</p>
4) Professional skills for PhD candidate (e.g. master program, specializations, softwares, language, analytical techniques):	<p>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,</p> <p>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),</p> <p>Scientific achievements, including publications or speeches at scientific conferences, will be an additional advantage,</p> <p>Fluency in English (spoken and written),</p> <p>Ability to work independently in a defined time regime, to present complex results in international forms in a concise and accessible way.</p>
5) Details of the project to support PhD research	
a) Project title:	EPOS - European Plate Observing System (EPOS-PL+)
b) Agreement number:	POIR.04.02.00-00-C005/19
c) Number of months in the project to support PhD (in months; starting from 1st of October 2021):	18
6) Project website:	