



LSGI Distinguished Lecture Series

“Impact and Mitigation of Ionospheric Scintillation Effects on GNSS Positioning”

Overview

It was our pleasure to invite Dr. Marcio Aquino, Associate Professor, Faculty of Engineering, The University of Nottingham, UK, to deliver a seminar of the LSGI Distinguished Lecture Series on 5 Sep 2018.



Biography

Marcio is a Geodesist with a PhD in Space Geodesy and has carried out research on Global Navigation Satellites Systems (GNSS) for many years. He currently leads research on mitigation of ionospheric effects on GNSS at the Nottingham Geospatial Institute (NGI) of the University of Nottingham. His main interests involve system vulnerability to ionospheric disturbances and corresponding countermeasures. The study of ionospheric variability and scintillation detection/mitigation are currently strong research interests, in particular related to impact on high accuracy GNSS positioning. He currently leads the TREASURE project (www.treasure-gnss.eu), a Marie -Curie Actions (MSCA) Innovative Training Network (ITN), funded through the European Horizon 2020 Research and Innovation Programme.

Impact and Mitigation of Ionospheric Scintillation Effects on GNSS Positioning

Global Navigation Satellite Systems (GNSS), such as the US GPS, the Russian GLONASS and the new under development European Galileo and Chinese Beidou, underpin a number of modern life activities, providing positioning accuracy that can support from mass market to mission-critical high accuracy applications. Signals from GNSS satellites are disrupted when propagating through the atmosphere before reaching the GNSS receiver antenna. The ionosphere, the ionized part of the upper atmosphere, is critical in GNSS positioning, due to its high variability and to disturbances such as scintillation, a phenomenon characterised by fluctuations in signal amplitude and phase, which can significantly disrupt transionospheric signal propagation. Scintillation degrades GNSS positioning accuracy and may even render the GNSS receiver incapable of maintaining lock on a satellite if sufficiently severe on that path to the antenna. This talk covers work carried out at the

Nottingham Geospatial Institute of the University of Nottingham and presents real life examples of the impact of scintillation on GNSS positioning, describing some proposed approaches to mitigate these effects, as well as results of their application. A brief introduction to the TREASURE project (www.treasure-gnss.eu) and its contribution to this field of research will also be given.