



2016-IPR-G-000-6653

**Phase scintillation inferred from Radio  
Occultation data**

**Position for:**

Trainee

**Short description of activity:**

Among the many activities carried out by the Galileo sector within the Security Technology Assessment (STA) Unit, the development of reliable and easy-to-use measurement indices for space weather-induced effects such as ionospheric scintillation is an open topic. This task relates to investigating proxies (other than S4 index) for the occurrence of scintillation using standard GNSS receivers and numerical prediction models of the ionosphere. In this regard, it is of utmost importance to correlate the scintillation information measured by JRC's receivers with other sources from different nature.

The field of Radio Occultations is an active field of GNSS research. A GPS occultation event occurs when a GPS satellite sets/rises below/above the horizon of a LEO satellite. Under such circumstances, provided the LEO satellite is equipped with at least one GPS receiver on board and antenna pointing to the limb, the change in the delay and the bending of the signal path between the GPS and the LEO satellite caused by the atmosphere can be derived from the observations in the GPS receiver on board the LEO [Hajj and Romans, 1998]. This technique offers many opportunities in the field of atmospheric research and there are still many opportunities to exploit its usage.

The successful candidate will, in close cooperation with the staff of the Galileo sector and possibly in agreement with a responsible for his university studies, produce a study regarding the statistical overview using COSMIC measurements over the Peruvian longitude sector coupled with GPS S4 measurements from Jicamarca Radio Observatory with a primary focus on midnight and post-midnight scintillation observations. In this respect, the contribution of the Trainee will be in the recollection of COSMIC data, creation of software tools to statistically analyse such data and generate inter-comparisons with GPS S4 data from ground stations. According to his/her performance, this study can be extended to other areas of ionospheric interest.

**Qualifications:**

**Essential:**

The candidate should have or should be close to attain a university degree in one of the following disciplines:

	<p>telecommunication engineering, mathematics, physics or computer science. Good command of oral and written English (level B2).</p> <p><u>Advantage:</u> Good programming skills are desired.</p> <p><b><u>For general eligibility requirements, please read the rules governing the traineeship scheme of the JRC:</u></b> <a href="https://ec.europa.eu/jrc/en/working-with-us/jobs/temporary-positions/jrc-trainees">https://ec.europa.eu/jrc/en/working-with-us/jobs/temporary-positions/jrc-trainees</a></p>
<b>Institute/Directorate Unit</b>	<p>IPSC G05 Further information: <a href="http://ipsc.jrc.ec.europa.eu">http://ipsc.jrc.ec.europa.eu</a></p>
<b>Indicative duration</b>	4 months
<b>Preferred starting date</b>	01/6/2016
<b>JRC Site</b>	Ispra
<b>Country</b>	Italy
<b><u>JRC contact details</u></b>	<p><b>For any technical problems with your application, please contact:</b> <a href="mailto:JRC-ESRA@ec.europa.eu">JRC-ESRA@ec.europa.eu</a></p>