Announcement of one PhD position at the
Transient Plasmas in Planetary Atmospheres group (TRAPPA)

Institute of Astrophysics of Andalucia (IAA - CSIC)
(Granada, SPAIN)

We announce one PhD (doctoral) position under the supervision of the *TRansient Plasmas in Planetary Atmospheres* (TRAPPA) group (www.trappa.iaa.es) at the IAA - CSIC (www.iaa.es) in Granada within the context of the recently granted project "***CONTRIBUCIÓN DEL IAA A LA EXPLOTACIÓN CIENTÍFICA DE ASIM: OBSERVACIONES DESDE EL SUELO Y ANÁLISIS DE DATOS***" with Ref. ESP2017-86263-C4-4-R.

We offer a fulltime employment as a PhD (doctoral) student **for 3 years (with possible extension of 1 year)**. The starting date of the contract is negotiable but ideally it would **be September 15, 2018**. The PhD candidate to be recruited by our group will be employed with full social security coverage.

IMPORTANT: If you are interested but do not have yet your master (but **plan to have by early September 2018**) you can still apply. However, note that, in order to be hired, you need **to be registered (by early September)** as a doctoral student of the University of Granada, Spain.

DEADLINE FOR APPLICATION: July 10, 2018

The succesful candidate will perform original research on Atmospheric Electricity, Atmospheric Physics and Plasma Sciences in the context of the **Atmospheric Space Interaction Monitor (ASIM)** succesfully launched **April 2, 2018** and already coupled in the Columbus module of the International Space Station (ISS). **ASIM is a space mission of the European Space Agency (ESA)** in which Spain has a significant participation. Our group is part of the ASIM scientific team.

The gross salary is **1460 EUR per month (with 14 annual payments)**. We look for **highly motivated** students that hold a **Master degree** in physics, applied mathematics and/or engineering The candidates **must have a MASTER degree** in physics, applied mathematics and/or engineering and demonstrate a high level of accomplishment and excellence in her/his previous academic experience.

The candidate should have **very good programming (Python, Fortran) and mathematical skills** and **high interest in data analysis**. In addition, suitable candidates for this position are expected to have an **excellent command of English and good academic writing and presentation skills**. In the selection process, special consideration will be given to candidates with some demonstrable experience with data analysis.

Project
Analysis of ASIM data from atmospheric electrical events

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Description

ASIM research has three main general themes: climate processes, the interplay of the atmosphere with the Earth's surface and changes of the atmosphere from space processes. Primary research objectives include: Study the physics of lightning and Transient Luminous Events (TLEs) including possible nitrogen oxide (NOx) production from some TLEs. Optical detection of TLEs with high spatial and time resolution in selected spectral bands to have a comprehensive global survey. Study the physics of Terrestrial Gamma-ray Flashes (TGFs) and their relationship with TLEs and thunderstorms. X-ray and Gamma-ray detection of TGFs with high time resolution and at photon energies reaching between 10 keV up to 10 MeV. Simultaneous optical detection of thunderstorm and TLE activity with TGF activity. Study the coupling to the mesosphere, thermosphere and ionosphere of thunderstorms and TLEs. Observations from space during a minimum of four years at all local times to observe seasonal and local time variations in thunderstorm, TLE and TGF activity.

ASIM scientific instruments include 2 cameras, 3 photometers and one X- and gamma-ray detector. The cameras, photometers observing in different optical spectral bands and the X- and gamma-ray detectors are all directed downwards (nadir) in order to avoid strong X- and gamma-rays absorption in the atmosphere. The cameras and photometers constitute the so called Modular Multispectral Imaging Array (MMIA). The X-ray and gamma-ray detector is called the Modular X- and Gamma-Ray Sensor (MXGS).

The **most significant part of this PhD (doctoral) project** will consist in the **analysis of data** recorded by the cameras and photometers of the MMIA instrument alone or in correlation with data of the MXGS instrument. The principal goal of this PhD project is to perform scientific data analysis able to extract new physical correlations between lightning, TLEs and TGFs. It is expected that the successful candidate uses and/or develops algorithms to extract physical meaningful information from MMIA optical observations of lightning and TLEs.