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 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 European Innovative Training Network "*Science And INnovation with Thunderstorms*" (SAINT) - http://cordis.europa.eu/project/rcn/205435_en.html - with 15 PhD students working in 10 academic institutions and collaborating with 9 companies. Collaboration within the network is strongly encouraged.

All nodes of the SAINT network participate in the training, feeding upon collaborations through the network. The position includes short stays in some of the world leading research centers within the network. Yearly meetings (summer and winter schools) of the complete network are foreseen.

We offer a fulltime employment as a PhD student **for 3 years**. The starting date of the contract is negotiable but ideally it would **be January 1st, 2018**. The PhD candidate to be recruited by IAA - CSIC will be employed with full social security coverage and all benefits in accordance with the Marie Sklodowska-Curie ITN fellowship regulations of the European Union.

The salary consists of the gross Monthly Living Allowance of 3,110 EUR per month pondered by the EU correction coefficient (97,6% for Spain); in addition, a Mobility Allowance of 600 EUR per month will be paid, and also possibly another 500 EUR per month of Family Allowance depending on marital status. The ESR salary is subject to local tax, social benefit and other deductions following spanish regulations.

The candidates must demonstrate a high level of accomplishment and excellence in her/his previous academic experience.

By EU requirements, elligible candidates may be of any nationality and, at the time of signing the contract upon joining the destination:

- Must be in the first four years (full-time equivalent) of their research careers and **have not yet been awarded a doctoral degree**. This four-year span is measured from the date when they had obtained the degree which would formally entitle them to embark on a doctorate, either in the country in which the degree was obtained or in the country in which the training will be provided. This applies irrespective of whether he/she intends to obtain a PhD degree in the future.

- Must not have resided or carried out their main activity (work, studies, etc) in the country of their host organisation (Spain in this case) **for more than 12 months in the 3 years immediately prior to the reference date.** Short stays such as holidays and/or compulsory national service are not taken into account.

Project
Ultrafast spectroscopy and modeling of lightning

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Description

This PhD project focuses on exploiting the scientific capabilities of our newly designed and recently built *GrAnada LIghtning Ultrafast Spectrograph* (GALIUS) in combination with the modeling of lightning dynamics. GALIUS is a portable, high spectral resolution imaging spectrograph that achieves unprecedented high speeds designed to work in the ultraviolet, visible and near infrared spectral ranges. The PhD project aims at determining key spectral properties (electron density and temperature, electric current electric field, ...) of the different temporal phases (streamers, leaders, return stroke and arcs) of lightning in order to understand lightning dynamics and the chemical influence of lightning in the atmosphere. Thus, the project also involves the use and/or development of lightning leader models to compute the

production of nitrogen oxides (NOx) and other chemical species (ozone, ...) in lightning processes using inputs from the spectral characterization of lightning. A number of spectroscopic + imaging campaigns will be undertaken in high-voltage facilities (where lightnings are mimicked) and different locations (for natural and/or triggerd lightning) in coordination with colleagues of collaborating groups.

Project requirements

We are looking for a highly motivated PhD candidate with strong interest in pursuing cutting edge research in time-resolved spectroscopy of lightning and transient electric discharges in combination with modeling. The PhD candidate is **required to have a master degree** in physics, engineering, applied mathematics or a related field, having some familiarity with topics in plasma physics and spectroscopy. Candidates are expected to be fluid in English (both oral and written), good academic writing and presentation skills and some experience with programming skills (Python, Fortran). In the selection process, special consideration will be given to candidates with some demonstrable experience with spectroscopy and data management.