Exploring extreme transients in the era of time-domain surveys

The *Supernovae and Stellar Transients* group at the Institute of Space Science (ICE-CSIC; www.ice.csic.es/) invites applications for one PhD position on the project "Exploring Extreme Transients in the Era of Time-Domain Surveys" supervised by Dr Claudia Gutiérrez.

The Supernovae and Stellar Transients group (https://hostflows.github.io/) studies the physics driving the explosion mechanism of supernovae and other stellar transients and also focuses its research on improving the understanding of supernovae as cosmological distance indicators. The group has broad expertise in observational astronomy, transients physics, programming, and statistical and model analyses. The group is part of recognised international collaborations, such as the Advance Public ESO Spectroscopic Survey of Transient Objects (ePESSTO+; https://www.pessto.org/), the NOT Unbiased Transient Survey (NUTS2; https://nuts.sn.ie/), La Silla Schmidt Southern Survey (LS4; http://publish.illinois.edu/transient-variable-2023/files/2023/06/2023_06_LS4_UIUC.pdf), the Vera C. Rubin Observatory Legacy Survey of Space and Time (LSST; https://www.lsst.org/) Dark Energy Science Collaboration (DESC; https://lsstdesc.org/), the ESA Euclid mission (www.euclid-ec.org), among others.

We are looking for a highly motivated student with an astrophysics background interested in understanding the physics and diversity of extreme supernovae and their link to their progenitors and environments. The successful candidate is expected to work primarily with observational data by developing novel techniques to identify and select new extreme transients and build innovative tools to analyse their observed properties.

The Institute of Space Sciences (ICE, CSIC) has been distinguished as one of the Maria de Maeztu institutions in Spain, a highly prominent excellence-in-research recognition. The group has broad access to local supercomputing facilities: the Marenostrum supercomputer (www.bsc.es/marenostrum/marenostrum, a Tier-0 system of the European PRACE network), the ICE computing cluster (with about 400 hyper-thread cores and 5TB RAM), the Port d'Informacio Cientifica (www.pic.es) and its HPC facility for big data sharing/distribution CosmoHUB (www.cosmohub.pic.es), in addition to the computing resources available to the international collaborations mentioned above.

Applicants are expected to have the academic credentials to enrol in the PhD program at the Autonomous University of Barcelona (UAB; www.uab.cat) during the 2024/2025 academic year. This usually translates into having completed or being close to completing an MSc (Master) degree or equivalent. The position is for four years, with salary and benefits in line with other PhD positions in Spanish institutions. Details for UAB PhD in Physics program access can be found in: https://www.uab.cat/web/postgraduate/phds/all-phd-programmes/admission/access-requirements/physics-1345660700204.html?param2=1345658736441.

Candidates from all fields of astrophysics and related areas of physics are encouraged to apply. We seek a candidate who is committed to an inclusive and collaborative academic community. Individuals from traditionally underrepresented and underserved populations in physics/astronomy are strongly encouraged to apply.

Application Requirements:

Applicants should possess an undergraduate and master's degree in physics, astronomy or a closely related field. Full-time commitment and proficiency in English are essential. Prior research experience is welcome but not required.

Documents for the application:

- Motivation letter.
- Contact information of at least 2 references who are willing to write recommendation letters, if requested.
- Curriculum Vitae (CV) detailing your academic background, research experience, publications (if any), and any relevant skills (maximum 3 pages).
- Copy of official undergraduate and graduate academic transcripts.
- Copy of title, academic Master's degree certificate, or an official letter from their University indicating expected graduation date.

All application documents should be sent to cgutierrez@ice.csic.es and gerencia.ice@csic.es with the email subject JAEPRE23-48, followed by the applicant's surname(s). We encourage candidates to contact us and submit their documents before **October 30, 2024**, but the position will remain open until filled.

Contact Information:

If you have any questions or require further information, please contact:

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