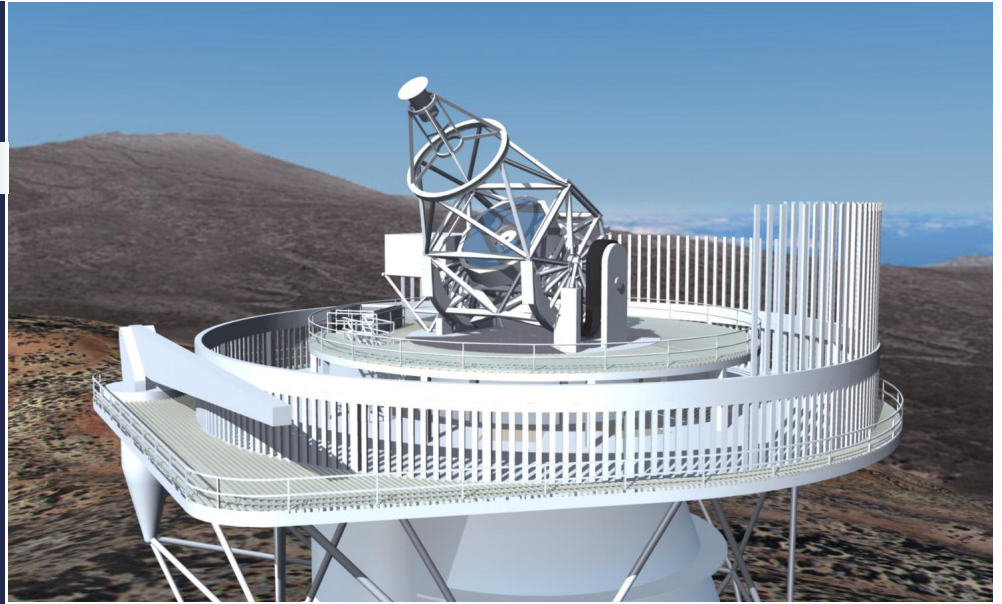


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EST NewsLetter

Editor's Corner



Welcome to the first EST Newsletter!

Manuel Collados Vera

EST Coordinator

The European Solar Telescope (EST) is a next generation large-aperture solar telescope, to be located in the Canary Islands, one of the prime locations for astronomical observations.

This 4-metre solar class telescope will be optimised for studies of the magnetic coupling between the deep photosphere and upper chromosphere. This will require diagnostics of the thermal, dynamic and magnetic properties of the plasma over many scale heights, by using multiple wavelength

imaging, spectroscopy and spectropolarimetry. To achieve these goals, the EST will specialize in high spatial and temporal resolution using various instruments simultaneously that can efficiently produce 2D spectral information.

EST is a major initiative organized by the European Association for Solar Telescopes (EAST). EAST is a consortium of research centres representing the corresponding national community of solar physicists from 15 European countries. This association promotes the design, development and operation of this new telescope, to keep Europe in the front line of solar physics.

The present newsletter aims to address all the news related to the implementation of this new research infrastructure and highlight the most relevant results of the projects that support it (e.g. SOLARNET, GREEST and PRE-EST). We will keep you up-to-date with news from the project and progress at regular intervals of six months. Thus, this first edition of the newsletter introduces, among others, the launch of the project as a new ESFRI project.

Next Events

ESFRI Exchange of Experience Workshop

Malaga, Spain
18 January, 2017

*IV SolarNet Conference:
The physics of the Sun from the interior to the outer atmosphere*

Lanzarote, Canary Islands, Spain
16-20 January, 2017

*7th Solar Orbiter Workshop:
Exploring the solar environs*

Granada, Spain
3-7 April, 2017

*First China-Europe
Solar Physics Meeting*

Kummin, Yunnan, China
15-18 May, 2017

*ESPM-15: 15th European Solar
Physics Meeting*

Budapest, Hungary
4-8 September, 2017

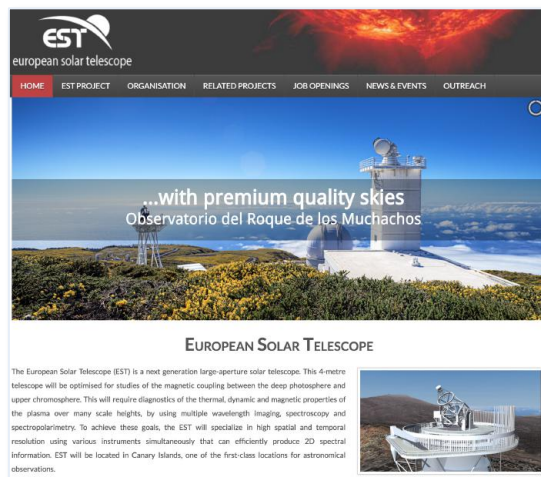
EST News

The European Solar Telescope, chosen as a Strategic Scientific Installation for Europe

Last 10 March 2016, the *European Strategy Forum on Research Infrastructures* (ESFRI) presented the 2016 ESFRI Roadmap on research infrastructures in Amsterdam.

During the event, it was announced that the European Solar Telescope (EST) is now included in the Roadmap 2016. EST is a 4-metre class telescope designed to study the fundamental processes in the Sun that control the solar atmosphere and its activity and the physical conditions in the heliosphere. Manuel Collados Vera, on behalf of the EAST Association, presented this new research infrastructure and pointed out the project's potential impact on the advance of our knowledge: understanding the interaction of plasmas with magnetic fields has many technological application, e.g. in nuclear fusion reactors. Space missions also rely greatly on data from ground solar telescopes.

Now that EST has achieved priority status, it has reasonable hopes of obtaining firm financial backing from its members in the near future. The Spanish government has already, via the Secretary of State for Research, Development and Innovation, offered its clear support and the commitment of a strong Spanish contribution to the building of the EST.



New corporate EST website presentation

EST has completely renovated its corporate website in order to communicate its main distinctive features and its main objectives as a new strategy research infrastructure in Europe. The website also includes in its organizational structure the key areas of EST: technical description of the project, current organisation, main related funded projects in the framework of EST, job openings, news and events as well as outreach and dissemination activities.

This action to improve the website is part of the activities proposed by the GREY project, intended to take EST to the next level of development by undertaking crucial activities which will improve the performance of current state-of-the-art instrumentation as well as addressing legal, industrial and socio-economic issues as key questions for the attainment of EST.

Lastly, instead of creating a new website for each new funded project (e.g. SOLANET, GREY, etc.), it has been decided to gather all of them onto the EST website, where anyone can follow the progress of those projects.

Approved: the Preparatory Phase of EST (PRE-EST)

Under the acronym PRE-EST, the *Preparatory Phase of the European Solar Telescope* has recently been approved by the European Commission with a total funding of 4 million euros under the H2020 Framework.

The inclusion in the ESFRI roadmap does not guarantee that these infrastructures will be built. Thus, before proceeding with the construction and/or implementation of EST, many preliminary decisions need to be taken with respect to issues such as identification of funders, financial plan for sustainability, governance by involved stakeholders and the legal form of the managing organisation. The aim of this project is to provide catalytic and leveraging support for the preparatory phase of the EST project leading to the successful construction of this new research infrastructure.

In particular, the specific objectives of PRE-EST are: (1) to explore possible legal frameworks and related governance schemes; (2) to explore funding schemes and funding sources for EST; (3) to compare the two possible sites for EST, both of them in the Canary Islands Astronomical Observatories, and to prepare final site agreements; (4) to engage funding agencies and policy makers for a long-term commitment which guarantees the construction and operation phases of the Telescope; (5) to involve industry in the design of EST key elements to the required level of definition and validation for their final production; (6) to enhance and intensify outreach activities and strategic links with national agencies and the user communities of EST.

This 4-year project is promoted by the European Association for Solar Telescopes (EAST) and will kick off early in 2017. The project consortium involves 23 research institutions from 16 countries.



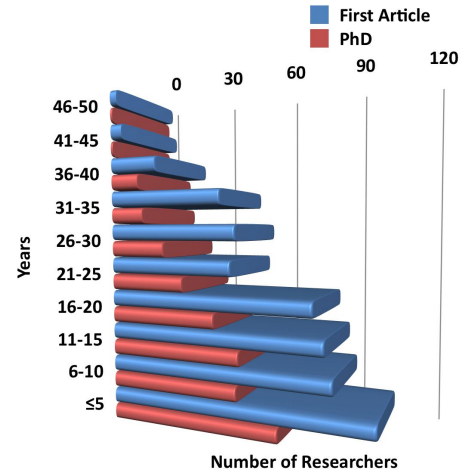
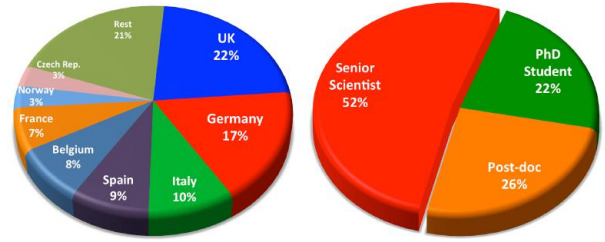
Related Project Outputs

European Solar Physics Community

A first census of the European Solar Physics Community has been recently performed within the framework of GREST project. In collaboration with the heads of the identified research groups in Europe, this census contains information of the gender, experience and position of each group member. Later, researchers were contacted directly to learn about their research interests and their views about the EST impact. The main conclusions of this activity were:

1. A total of 615 researchers were identified in 22 European countries.
2. Nine countries concentrate more than 80% of the Solar Community.
3. The community is composed of 52% of Senior Scientists, 26% of Post-docs and 22% of PhD Students.
4. The proportion of female staff is 27%.
5. The most popular research areas are Atmosphere (12,9%), Magnetic Fields (12,7%), Flares (8,3%), Corona (7,8%) and Chromosphere (7,4%).
6. More than 80% of the researchers consider the scientific interest of EST is either "Extremely Important" or "Very Important". Moreover, around 90% of the respondents think their research lines will "Definitely" or "Probably" benefit from EST observations.

A complete report of the census can be found in the EST website.



SOLARNET Young Researcher Mobility Programme



One of the main objectives of the SOLARNET project consists on supporting the mobility of young researchers as part of its networking activities. This mobility programme has been designed, as an additional aspect of the training program, to reinforce the contacts between different research groups and to allow young researchers to establish international collaborations. EC funds have covered travel and accommodation costs for young researchers staying for a maximum of 3 months hosted by, preferably, one of the institutions involved in SOLARNET. The programme is now closed after 4 years and 7 calls, reaching the following figures:

- 20 young astronomers from 9 countries carried out short stays.
- A total 165 weeks were funded, with an average stay of 8,3 weeks.
- The average age of the astronomers was 28,9.

Last, the Programme has also supported the finance the accommodation of 9 PhD students and 1 junior Postdoc during the last ESPM 2014.

The prototype Integral Field Unit is now at the GREGOR telescope

On October 13, the SOLARNET project received from Winlight Optics the prototype of the Integral Field Unit (IFU), designed by the optical department of the IAC, and manufactured by the company. The instrument is based on the "image slicer" concept and, thanks to its small size and the excellent optical quality of its construction material, represents an important technical milestone in solar astrophysical instrumentation.

Each of its 8 functional "slices" has a thickness of 100 microns, and the set also includes its corresponding blocks of 8 collimating mirrors and 8 camera mirrors, providing 8 individual slits suitable for its use by the GRIS spectrograph of the GREGOR telescope. The whole set has been manufactured in Zerodur, the material with the lowest coefficient of thermal expansion that can support this application. The present prototype is framed within the preparatory roadmap to face the technological challenge of equipping the EST with spectroscopy based on image slicers. It is estimated that the thickness requirement of the EST slices is 50 microns. The IFU is being installed at the GREGOR telescope for its first tests.



EST Newcomers



Carlos Dominguez
GREST Optics

Carlos Dominguez has a PhD in Astrophysics from Universidad de La Laguna, and specializes in instrumentation. He has collaborated in the design, verification and scientific exploitation of several instruments for astronomy, such as TIM, LIRIS, GTC and PHI/Solar Orbiter.

He is currently working as a postdoc at the IAC, where he collaborates in the development of the integral field spectrograph for EST. He is conducting the optical tests of the first prototype at the Gregor Telescope in the Teide Observatory and he will be fully involved in the design of the next prototype and the final instrument.

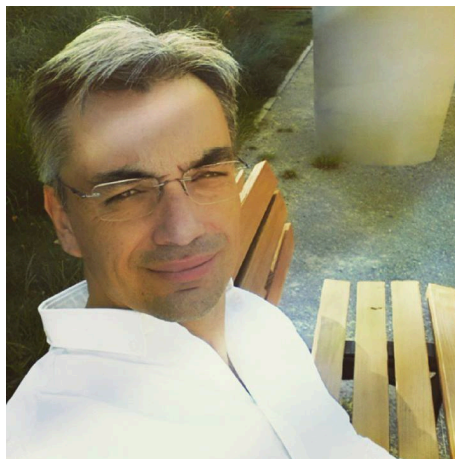


Txinto Vaz
GREST System Engineer

While the technical background of Txinto Vaz is software engineering, he has been working as a systems engineer of mechatronic safety critical devices in the automotive industry since 2001.

As embedded systems developer, he has big experience in buses like the CAN bus, and also in dealing with hard real time requirements. He has also developed science software for astronomy, like the GTC Osiris MOS Mask Designer tool, which allows client astronomers to design a valid MOS mask with their own laptop.

His main task in GREST project is to act as a link between the science and the engineering staffs, to keep track of the technical requirements of the IAC technical work packages, and to supervise technical documentation from the rest of the consortium.



Sebastián Jiménez
GREST Technology Manager

Sebastián Jiménez has a PhD in Astrophysics from Universidad de La Laguna, and undertook several postdoctoral research positions in different institutions in Europe and USA, mainly in solar physics observations.

He is an expert in research/innovation interface, fostering and managing public-private collaborations at national and international level, ensuring the correct IPR management as well as promoting the exploitation and dissemination of the research results.

As GREST Technology Manager, he will be in charge, among other issues, of evaluating the suitable legal, governance and financing models for the EST during its construction and operational phase, taking into consideration the experiences of other ESFRI research infrastructures.



Alejandra Martín
GREST Project Manager

Alejandra Martín obtained an MSc in Soil Physics, but then specialised in European RTD programs at the Spanish Office for Science and Technology in Brussels. She has been involved in the management of a significant number of European RTD projects while working in the IAC's Institutional Projects Office. Moreover, she was the project manager of the Trans-national Access Office of OPTICON FP6 and the FP7 ITN DAGAL.

She is currently providing support to the GREST coordinator and consortium, for the fulfilment of the scope of the project. Alejandra is the principal person responsible for regular communication with the WP and task leaders to make sure that the developments and schedule are carried out within the predictions of the project plan.



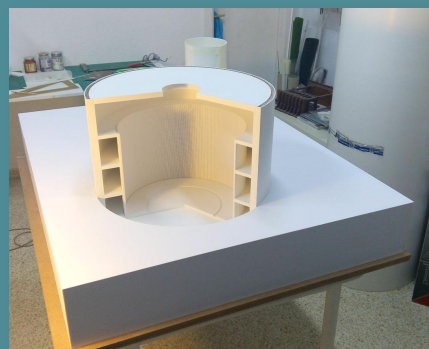
+ Find last job opportunities at EST website

Outreach & Dissemination

EST Scale Model

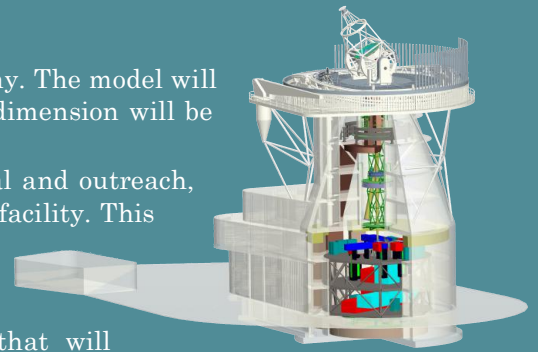
A scale model of the EST is under development by the FabLab company. The model will be constructed mainly in PVC, among other materials, and its final dimension will be around 1,20x1 meters at the base and 1 meter tall.

The aim of this exhibition model is twofold, to be used in educational and outreach, and will present a cross-section of 120° to visualize the interior of the facility. This model reflects the state of the latest design of the telescope, although minor changes may take place until the final design is completed.



The model will have moving parts and augmented reality that will allow visitors to have a better interpretation of how the telescope works. The augmented reality will complement the common description panel in the exhibition, and graphics and video will connect with the physical model. Thus, visitors will be able to interact with computer generated simulations, exploring and learning details of each relevant area of the telescope.

The scale model will be initially located at the Instituto de Astrofísica de Canarias (IAC), but it is expected to visit different science museums and research centres in Europe.



SOLARNET IV MEETING

THE PHYSICS OF THE SUN FROM THE INTERIOR TO THE OUTER ATMOSPHERE

Lanzarote, Spain, 16-20 January 2017

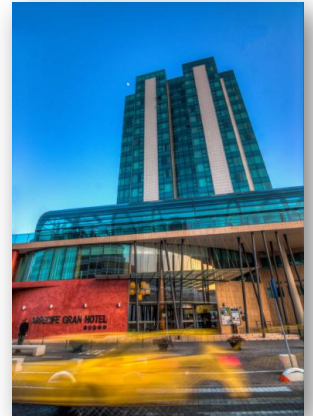


The 4th SOLARNET meeting "*The physics of the Sun from the interior to the outer atmosphere*" will take place in Arrecife, Lanzarote (Spain) from 16th to 20th of January 2017, organized by the Instituto de Astrofísica de Canarias (IAC).

The purpose of this conference is to provide a coherent picture of the Sun as a single physical system playing all the underlying physical processes measured and observed in the solar atmosphere to date. Graduate students and early-career postdocs are particularly invited to participate in the conference to present their research work and to meet and discuss with their more senior colleagues.

This conference is expected:

1. to provide a forum to discuss recent advances in the study of the solar interior, solar dynamics and dynamo, mechanisms of sunspot and active regions formation, and links between the subsurface dynamics, flaring and CME activity;
2. to identify the new problems in the study of the solar interior and atmosphere, and of the solar dynamics and magnetism;
3. to foster collaborations between researchers working at the study of the Sun's interior and solar atmosphere and to create synergies between solar research programs at different wavelength bands.



Contact: solarnet4m@iac.es

www: <http://www.iac.es/congreso/solarnet-4meeting/>

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