

## THE SVO ROLE IN THE PREPARATION OF THE “FIRST SCIENCE WITH THE GTC”

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### ABSTRACT

The Gran Telescopio de Canarias (GTC) is approaching the end of its commissioning phase and will start to operate regularly in 2009. In order to ensure the success of the early scientific exploitation of the telescope, a consortium of several Spanish research groups (Consolider-GTC) was created and funded by the Consolider Ingenio-2010 programme. The Spanish-VO group (SVO) is part of this consortium participating in the research activities identified by the Consolider-GTC scientific groups, in particular in those that benefit from the use of the VO. In this poster we present the role of the SVO in the scientific exploitation of the GTC.

Key words: Virtual Observatory; Consolider-GTC.

### 1. THE GRAN TELESCOPIO DE CANARIAS

The GTC (Fig. 1), a 10.4m telescope with a segmented primary mirror, is the world largest telescope of its class. Located in one of the top astronomical sites in the Northern Hemisphere (the Observatorio del Roque de los Muchachos, La Palma, Canary Islands), the First Light event took place on July 13st, 2007. GTC is expected to start scientific operations in the course of 2009.

### 2. THE CONSOLIDER-GTC CONSORTIUM

The Consolider-GTC consortium includes more than 150 people from 24 research centers. It is founded by the Spanish Ministry of Science and Innovation through the Consolider Ingenio 2010 programme named “First Science with the GTC”. Its main goal is to ensure a first class scientific production since the moment the GTC begins operations by performing coordinated research programmes. In addition, it is also actively involved in the development of scientific instrumentation, providing an unique environment where instrumentalists and researchers are in direct and continuous contact. In this



Figure 1. The Gran Telescopio de Canarias.

sense, special mention has to be made of the International School for Advance Instrumentation (ISCAI), which had its first course in 2008.

### 3. THE SPANISH VIRTUAL OBSERVATORY

The SVO officially started in June 2004. Its purpose is to provide an efficient coordination among the VO-related national initiatives and to achieve an effective integration of all the expertise in this research domain. It is the contact-point for the international VO-projects as well. The Laboratory for Stellar Astrophysics and Exoplanets (LAEX, formerly known as LAEFF) is the core of SVO with 10 FTEs (Fig. 2). In addition, the SVO coordinates a thematic network with almost 100 people from 17 research institutes. Among its lines of work are VO-archives, VO-services, Data Mining and VO-science. Further information can be found at <http://svo.laeff.inta.es>.



Figure 2. LAEX's members of the Spanish Virtual Observatory.

#### 4. THE SVO PARTICIPATION IN THE CONSOLIDER-GTC

The SVO actively participates in the research activities identified by the Consolider-GTC scientific groups that could benefit from the use of VO services and tools. The collaboration is carried out in 3 steps:

- 1- Evaluation of the scientific case in terms of the existing VO standards and tools.
- 2- Design and development of a VO methodology, looking into the best way to perform the proposed analysis using the most suitable VO tools.
- 3- Design and development of new tools, if the existing VO-tools are not adequate to tackle the scientific problem.

##### 4.1. Scientific cases

Some scientific cases have been already proposed by several Consolider-GTC groups to be developed in the VO framework:

- Identification of new OB stellar associations and clusters by cross-matching existing catalogues and applying colour criteria for different distance modules. The analysis covers the whole sky and is performed in an iterative way.
- Identification of T brown dwarfs by cross-matching existing catalogues and applying photometric and astrometric criteria (Fig. 3).
- Identification of new X-ray binaries by cross-matching existing catalogues and applying colour criteria. The search is restricted to the galactic plane and focused in the detection of objects with H-alpha emission excess.

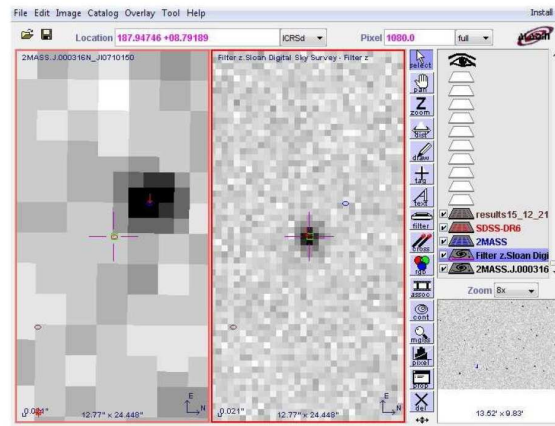


Figure 3. Identification of a T5.5 brown dwarf

- Publication in the VO of datasets (photometry, spectra, images) of a variety of scientific targets. Among them, there are young low-mass stars, brown dwarfs, X-ray binaries, and SED collections of extragalactic objects.

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