



## ANNOUNCEMENT OF OPORTUNITY FOR NEW INSTRUMENTATION FOR THE GRAN TELESCOPIO CANARIAS



Submission deadline: **30 May 2010**

GRANTECAN solicits proposals for the procurement of two **common user** science instruments. The GTC is a 10.4m state of the art telescope sited at the IAC's Observatorio del Roque de los Muchachos (ORM), in the Island of La Palma (Spain). The GTC started science operation on March 2009.

At this time GRANTECAN requests proposals for both an optical intermediate resolution spectrometer and a near IR intermediate resolution spectrometer, meeting the following specifications:

**Instrument 1.:** A high-throughput optical intermediate-resolution spectrograph, exploiting natural seeing and delivering the widest reasonably available field and multiplex gain.

- ❖ **Focal Station:** Folded Cassegrain
- ❖ **Spectral Resolution:**
  - A lower intermediate dispersion range centred around 10000.
  - A higher intermediate dispersion range centred around 20000.
  - Proposers may extend or add resolution ranges towards either lower and/or higher resolutions if the science case justifies the extension and/or the additional range.
- ❖ **Wavelength range:** 3700 – 9800 Å. Proposers may extend the wavelength coverage towards either end of the spectrum if the science case justifies the extension.
- ❖ The instrument will be a **common user instrument**. As such it shall comply with the GTC standards for hardware and software and GRANTECAN will be the final owner of the instrument.
- ❖ **Cost envelope:** 4 Million Euro
- ❖ **Guaranteed time envelope:** 660 Hours
- ❖ **Time Envelope:** 2015

**Instrument 2.:** A high-throughput near-IR intermediate-resolution spectrograph, exploiting natural seeing and delivering the widest reasonably available field and multiplex gain.

- ❖ **Focal Station:** Folded Cassegrain
- ❖ **Spectral Resolution:**
  - A lower intermediate dispersion range centred around 10000
  - A higher intermediate dispersion range centred around 20000.

- Proposers may extend or add resolution ranges towards either lower and/or higher resolutions if the science case justifies the extension and/or the additional range.
- ❖ **Wavelength Range:** 0.95 –2.5 $\mu$ . Possible extension to the L and M bands if the science cases justify it.
- ❖ The instrument will be a **common user instrument**. As such it shall comply with the GTC standards for hardware and software and GRANTECAN will be the final owner of the instrument.
- ❖ **Cost Envelope:** 6 Million Euro
- ❖ **Guaranteed time Envelope:** 660 hours
- ❖ **Time Envelope:** 2016

GRANTECAN is at this point requesting a conceptual design, containing:

- a) The PI name and address.
- b) Names and addresses of the members of the instrument team.
- c) A brief account of the past experience of the team.
- d) A fully developed science case. The science case should consist of one or more science cases that are used as design reference for the instrument specifications, plus other complementary science cases, briefly explained, demonstrating the wide variety of topics that will be enabled by the intended common user instrument.
- e) A conceptual opto-mechanical design of the instrument demonstrating the feasibility of the proposed design.
- f) Assembly drawings illustrating the main instrument subsystems and the instrument at the telescope.
- g) An analysis of the operating modes and calibration needs.
- h) A simulation of the instrument performance (sensitivities, spectral and angular resolution, data format) and simulations of selected key observations.
- i) A plan for the development of the Electronics and Software.
- j) A management plan with identification of main and intermediate milestones, as well as an overall schedule.
- k) Risk analysis and risk mitigation plan, indicating whether any part or subsystem requires special R&D.
- l) A well documented cost and plan of expenditure.

PIs willing to participate in this AO can apply for GTC funds to cover the costs associated with this Conceptual Design or Phase A stage up to an amount of 100,000 Euros. The request for these funds should be made before October 17<sup>th</sup> 2009. This request will be justified with a proposed working team, work plan, dates for progress review meetings and a justified payment profile for the preparation of this conceptual design. By requesting these GTC funds, the PI commits himself and his team to deliver to GTC a conceptual design for either of the optical or near IR instruments, meeting at least the above specifications. Proposals not meeting the above specifications will not be entitled to GTC funds.

Subsequent to completion of the Conceptual Design study phase, a panel of experts will select the competing designs that will proceed to Phase B (detailed design phase) and through to final completion of the instruments.

After this Conceptual Design phase, the GTC could suggest competing teams to merge their respective solutions if the teams are willing to do so, and if clear gains can ensue for the final instrument.

The initial “marginal” cost estimates for each of these instruments, including the cost of this conceptual design activity, are indicated as a cost envelope and those figures should be used as an upper limit when preparing proposals.

This AO is directed to PIs from institutes and research centres from the GTC community (Spain, Mexico and the University of Florida).

The following technical documents are applicable to the design of these instruments and available at the GTC web pages (<http://www.gtc.iac.es>):

- 1) Instrument Control System Specification. ESP/CTRL/0132-R (1.B)
- 2) GTC Control System Hardware Standards. ESP/CTRL/0043-R (2.A)
- 3) GTC Control System Software Standards. ESP/CTRL/0045-R (1.C)
- 4) GTC Control System Development Case. RPT/CTRL/0074-R (1.A)
- 5) GTC Services to the instruments. DCI/INST/0053 (3.B)
- 6) Interface Telescope Structure – Instrumentation. DCI/STMA/0018-R (1.G)
- 7) Science Instruments- Support elements. DCI/STMA/0037-R (1.C)
- 8) Configuration Identification. PRO/STMA/0005-R (1.G)
- 9) GTC Safety Program. RPT/STMA/0129-R (1.A)
- 10) Folded Cassegrain Instrument Rotator – Science Instrument  
DCI/TELE/0057-R (1.A)

The proposals should be sent to the Director of GRANTECAN, no later than May 30<sup>th</sup>, 2010.