

# Resultados del Concurso 2003B para Observaciones en Gemini-Sur

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## Propuesta: GS-2003B-Q-6

**Investigador Principal:** Dr. E. Gawiser (UCh)

**Título:** Deep GMOS Spectroscopy of Candidate Evolved Galaxies at  $z > 2$

**Resumen:** Deep VLT/ISAAC imaging has recently uncovered a substantial population of galaxies at  $z > 2$  identified by their red rest-frame optical (observed J-K) colors. Their total stellar mass content is estimated to be similar to that of Lyman break galaxies, and they could be the progenitors of massive early-type galaxies. Obtaining spectroscopic redshifts for these objects is challenging, as they are typically much fainter than Lyman break galaxies in the rest-frame UV. So far only five  $z > 2$  galaxies have been spectroscopically confirmed. Here we propose to obtain ultra-deep spectroscopy of 39 candidate evolved high redshift galaxies with GMOS, in HDF-South and CDF-South. The goals are to determine the redshift distribution of these proto-elliptical galaxies, the AGN fraction, their clustering, and the fraction of low redshift interlopers. The observations are part of the Chile-Yale Deep Survey, which aims to obtain a balanced set of multi-wavelength observations in four Southern fields.

**Tiempo asignado:** 28.1 horas

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**Propuesta:** GS-2003B-Q-18

**Investigador Principal:** Dr. L. F. Barrientos (PUC)

**Título:** SPECTROSCOPIC CONFIRMATION OF RICH GALAXY CLUSTERS AT  $z \sim 1$

**Resumen:** We propose to use Gemini+GMOS to study a new sample of high redshift clusters of galaxies obtained from the Red-Sequence Cluster Survey (RCS), a 90 deg<sup>2</sup> two-color imaging survey in both hemispheres. We will obtain ~150 galaxy spectra in the fields of 3  $z \sim 1$  galaxy clusters. The spectra will be used to (1) calibrate the cluster photometric redshifts to  $z \sim 1$ , and augment the value of the deep VLT IR and Magellan optical imaging already in hand; (2) determine the cluster masses and thus calibrate the  $B_{gc}$  richness parameter vs. velocity dispersion relation, to obtain masses for the rest of the sample; and (3) study the galaxy stellar populations by using line indices and principal component analysis.

**Tiempo asignado:** 18.0 horas

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**Propuesta:** GS-2003B-Q-31

**Investigador Principal:** Dr. T. Richtler (UdC)

**Título:** The dynamics of the outer cluster system of NGC 1399

**Resumen:** We propose to measure radial velocities of globular clusters around NGC 1399, the central galaxy in the Fornax cluster, within one radius bin at a projected galactocentric radius at 12.5 arcmin. The idea is to determine the velocity distribution (the velocity dispersion and its higher moments) at this radius with an unprecedented accuracy. A dynamical analysis, in combination with already existing cluster velocities in the inner region, will allow us to derive the dark matter potential out to 70 kpc with high confidence by purely stellar dynamical methods. Further possible differences between metal-poor and metal-rich clusters regarding their orbit distribution provide strong constraints on scenarios for the formation of the cluster system and NGC 1399 itself. A second objective is to examine whether low velocity clusters are concentrated around NGC 1399. If not this would strengthen the hypothesis that they trace a very diluted stellar population between the Fornax cluster and the Local Group.

**Tiempo asignado:** 21.3 horas

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**Propuesta:** GS-2003B-Q-44

**Investigador Principal:** Dr. P. Lira (UCh)

**Título:** N-band imaging of a complete sample of AGN

**Resumen:** We propose N-band imaging of a large and complete sample of obscured AGN using T-Recs. This is part of a comprehensive study obtaining infrared data in the 1-10 micron range for targets drawn from an IR-selected sample, ensuring a wide and representative variation in the characteristics of the obscuring material around the central sources. We will determine the spectral energy distribution of the active nucleus in the near and mid-IR to a high accuracy. The results will be compared to theoretical predictions from dusty torus models to constrain the geometry and physical conditions of the central engines. We will also test the reliability of the 10 micron emission as an unbiased luminosity indicator. We note that this proposal duplicates a 2002B submission, which was awarded observing time but subsequently cancelled due to instrument unavailability.

**Tiempo asignado:** 24.5 horas

**Propuesta:** GS-2003B-Q-36

**Investigador Principal:** Dr. G. Garay (UCh)

**Título:** The stellar content of high mass star forming cores

**Resumen:** We propose to use the mir-IR camera T-reCS in imaging mode with the NeII filter to observe a selection of dense molecular cloud cores that are thought to be in the earliest stages of massive star formation. While much progress has been made in recent years on determining the properties of the dense molecular cores thought to harbor the massive stars, less has been done on determining the characteristics of the massive protostars themselves. The NeII line brightness is directly related to the emission measure of the ionized gas HII regions around the newly forming massive stars. From the

emission measure and existing radio and far-infrared (IRAS) observations, we can derive the radii of the HII regions, the photoionization rate, and the percentage of the total dense cloud core luminosity contributed by the ionizing radiation from the massive stars and non-ionizing radiation from lower mass stars.

**Tiempo asignado:** 12.0 horas