

Resultados del Concurso 2004B para Observaciones en Gemini-Sur

Propuesta: GS-2004B-Q-29

Investigador Principal: Dr. Tom 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, at large galactocentric distances. We will determine the velocity distribution (the velocity dispersion and its higher moments) at large radii 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 uncovered between the metal-poor and metal-rich cluster populations regarding their kinematics and orbital distribution will also provide strong constraints on scenarios for the formation of the cluster system and NGC 1399 itself. A final objective is to examine whether low velocity clusters are concentrated around NGC 1399. If not, this would strengthen the hypothesis that they may trace a very dilute inter-galactic stellar population between the Fornax cluster and the Local Group. This proposal was granted 21.3 hours in 2003B but only 20% of the data were obtained so we are requesting the remaining 80%.

Tiempo asignado: 16.0 horas

Propuesta: GS-2004B-Q-38 (propuesta conjunta con US)

Investigador Principal: Dr. Eric Gawiser (UCh)

Título: Stellar Populations and Kinematics of Near-Infrared Selected Galaxies at $z > 2$

Resumen: Using very deep near-infrared imaging we have recently discovered a new population of high redshift galaxies with red rest-frame optical colors, complementary to the well known UV-bright Lyman break galaxies. Their contribution to the stellar mass density at $z=3$ is comparable to that of Lyman breaks. As such a large population of red $z > 2$ galaxies had not been predicted by theoretical models it is imperative to better understand their nature and their evolutionary link to Lyman break galaxies. Because these red high redshift galaxies are very faint in the optical (rest-frame UV) they can be studied most effectively in the near-infrared (rest-frame optical). In a pilot NIR spectroscopic study of four objects we found that the red galaxies are more massive and have higher metallicities than Lyman break galaxies. Furthermore, we found strong indications that Tully-Fisher like relations already existed at $z \sim 3$. Here we propose to continue a joint Chilean/US Gemini program to obtain deep optical and NIR spectroscopy of a substantial sample of near-infrared selected galaxies at $z > 2$ in fields with deep ground- and space-based NIR imaging. The main goals are to measure the Tully-Fisher relation at $z \sim 3$ and the contribution of UV-faint galaxies to the global star formation rate.

Tiempo asignado: 29.0 horas

Propuesta: GS-2004B-Q-42

Investigador Principal: Dr Felipe Barrientos (PUC)

Título: Spectroscopic confirmation of rich galaxy clusters at $z \sim 1.2$

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^2 two-color imaging survey in both hemispheres. We will obtain ~ 200 galaxy spectra in the fields of 5 $z \sim 1.2$ 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: 35.0 horas

Propuesta: GS-2004B-Q-50

Investigador Principal: Dr José Maza (U.Ch)

Título: The FeII/MgII emission line ratio in quasars

Resumen: *The FeII/MgII emission line ratio has been measured in many quasars at various redshifts. However, the reported FeII/MgII ratios are largely scattered and the break of FeII/MgII which would occur at 1-2 Gyr after Big Bang has not been found yet. During the course of measuring FeII/MgII in low-redshift quasars, we found a trend of large FeII/MgII toward high luminosity. If this trend is real, the luminosity effect of FeII/MgII can mask the evolution of FeII/MgII. Here we propose to do optical/IR spectroscopy of quasars using GMOS and GNIRS on GEMINI south. This is aimed at: (1) confirming the relationship between the FeII/MgII emission line ratio and the intrinsic luminosity of quasars by observing 20 quasars at $z = 2.0 - 2.3$ with luminosity of $M_b = -26 - -31$, and (2) exploring the evolution of FeII/MgII by observing 10 quasars at $z = 1.7 - 4.7$ with $M_b = -27.1 - -27.8$.*

Tiempo asignado: 31.0 horas

Propuesta: GS-2004B-Q-75

Investigador Principal: Dr Tom Richtler (UdC)

Título: Is there dark matter in NGC 7507?

Resumen: *The dark matter content of elliptical galaxies does not simply scale with galaxy luminosity. While some bright cluster galaxies have been found to have massive dark halos, more average ellipticals have shown little evidence for dark matter. One possible explanation for the "missing" dark matter is stripping or puffing-up of the halos through interactions in clusters and groups. The elliptical galaxy NGC 7507 is in the field, offering the possibility of testing the*

properties of a more primordial halo. Dynamical studies of its inner regions indicate dark matter is present, but conclusive results can only be obtained by probing radial regimes where the luminous matter is not dominant. We therefore propose measuring radial velocities of globular clusters in order to trace the mass profile of NGC 7507 out to larger galactocentric radii -- and to check the predictions of the CDM paradigm of galaxy formation.

Tiempo asignado: 16.0 horas

Propuesta: GS-2004B-Q-79

Investigador Principal: Dr Ronald Mennickent (UdC)

Título: Testing the evolutionary model for the Be star phenomenon

Resumen: *Fabregat & Torrej?n (2000) have suggested that the Be star phenomenon is an evolutionary effect appearing in the second half of the main sequence lifetime of a B star ($t > 10$ Myr). We plan to test this hypothesis, searching for Be stars in very young open clusters with ongoing stellar formation, where many emission line stars have been reported. We will search for emission bands characteristics of silicates and dust. If the aforementioned view is right, we expect to find these bands in a large fraction of our sample, probing that they are Herbig Ae/Be stars instead of classical Be stars, and hence getting an important piece of evidence supporting the Fabregat & Torrej?n hypothesis.*

Tiempo asignado: 9.2 horas