Resultados del Concurso 2008A para Observaciones en Gemini-Sur

Propuesta: G/2008A/008

Investigador Principal: Sebastián López

Título: PROBING CLUSTER GALAXIES WITH BACKGROUND QSOs

Resumen: We are conducting a spectroscopic survey of background QSOs close in projection to foreground clusters. One of the aims is investigating the effect of a dense environment on the statistics and physical conditions of MgII absorbers. This is the first time a search of this type has been conducted, mainly because of the lack of available samples of high-redshift clusters. Recently (LBLP et al., ApJ submitted), we have found that the statistics (dN/dz and Line Equivalent Width distribution) of MgII in z = 0.3 - 0.9 candidate galaxy clusters from the Red Sequence Cluster Survey is distorted with respect to the field distribution: while strong (W_0>1.0 A) absorbers show a significant excess (up to 10x at the 3sigma level), weak (W_0<0.3 A) absorbers conform to the field statistics. We argue that this dichotomy could be explained if weak MgII cluster galaxies have their cold halos truncated as a consequence of environmental effects. In this proposal we are asking for GMOS-MOS time with the goals of 1) confirm cluster redshifts and characterize the contamination level of our sample, 2) get redshifts of the galaxies closest to the QSO line of sight, 3) estimate cluster velocity dispersion.

Tiempo asignado: 35 horas

Propuesta: G/2008A/015

Investigador Principal Sebastián López

Título: Rapid Spectroscopy and Imaging Follow-up of Gamma-Ray Burst Afterglows (Gemini South)

Resumen: The Swift satellite has revolutionized the study of gamma-ray bursts by providing unprecedented numbers of accurate real-time localizations. With rapid and now automated access to GMOS-S, Gemini has emerged as the cornerstone facility of our group's GRB research efforts. A pressing question -- which we hope to address with a systematic imaging study with Gemini -- is the origin of so-called dark afterglow GRBs, which comprise roughly half the existing sample. Constraining, in particular, the number of dark GRBs at moderate-to-high redshift has important implications for understanding the bursts themselves as well as informing the role of future missions (eg. JDEM, LSST). In general, GRB afterglows have proven to be a versatile and unique astrophysical probe in the study of the ISM of distant galaxies, the IGM at z>2, and into the end of the reionization epoch. To this end, our proposed semester 2008A ToO program also seeks to uncover a number of damped-Lyman alpha systems as well as improve the (very curious) statistics of strong intervening Mg II absorbers towards GRB sitelines.

Tiempo asignado: 6 horas

Investigador Principal: Nikolaus Vogt

Título: Direct detection of the tentative accretion disks around two young sub-stellar companions

Resumen: The sub-stellar, possibly even planetary mass, companions around the two young T-Tauri stars GQ Lup and CT Cha are both exhibiting signs of mass accretion (in form of strong to intermediatePa-beta emission line). The formation of such low-mass objects is only poorly understood and the fact that accretion is still be present in objects with masses well below 30 Mjup and ages of 1 to 2 Myrs is an interesting hint towards the formation and nature of these objects. We propose here a N band imaging campaign with T-ReCS on Gemini/South in order to detect the thermal excess emission of the tentative disks surrounding the companions to GQ Lup and CT Cha, feeding the observed accretion. This program yields the first direct detection of thermal excess emission from a disk around planetary mass companions to other stars.

Tiempo asignado: 12, 5 horas

Propuesta: G/2008A/004

Investigador Principal: Matthias Schreiber

Título: Identification of a large sample of post common envelope binaries

Resumen: Close binaries containing a compact object make up a wide variety of objects such as white dwarf binaries, some of which are SN Ia progenitors, or black hole binaries. The evolution of all close binaries depends crucially on the rate at which angular momentum is extracted from the binary orbit The two most important sources of angular momentum loss (AML) are the common envelope (CE) phase and magnetic braking. Both processes are poorly understood. We are pursuing a successful SDSS/SEGUE-project to carry out the first dedicated spectroscopic survey of white dwarf/main

Tiempo asignado: 12, 5 horas

Propuesta: G/2008A/005

Investigador Principal: Guillermo A. Blanc

Título: Integral Field Spectroscopy of Lyman Alpha Blobs in the Extended-CDFS

Resumen: We propose to conduct Integral Field Spectroscopy of two narrow-band selected Lyman Alpha Blobs (LAB) at z=3.1 in the Extended CDF-S. The nature of these objects is still undetermined, and three main physical scenarios have been proposed to explain their extreme properties; (1) starburst-driven galactic superwinds, (2) cooling radiation from collisionally excited hydrogen in collapsing dark matter (DM) halos, and (3) photoionization by obscured UV continuum sources like AGN or a central starburst. Spatially resolved spectroscopy will allow us to measure the spatial dependence of the line profiles and the wavelength dependence of the surface brightness profiles of these objects. Using these observations we will test predictions of different models for the origin of the Lyman alpha radiation in LAB yielding insights on the process of early galaxy formation and the interaction between galaxies and the IGM.

Tiempo asignado: 5 horas

Investigador Principal: Paulina Lira

Título: Star Formation and Feedback in Massive Galaxies at z=3.5

Resumen: Recent multi-wavelength cosmological surveys that include deep near-infrared photometry have identified a population of galaxies at $z \sim 2.5$ with red rest-frame colors. These galaxies dominate the mass density of the universe at this redshift. We present a new NIR selection based on the H-K color to extend the study of red galaxies to z > 3. While as many as half of red galaxies at $z \sim 2.3$ have very low star formation rates, the H-K galaxies have significant rest-frame UV emission suggesting that they are still actively forming stars. Because the H-K galaxies are likely progenitors of red galaxies at lower redshift, they represent a promising laboratory for studying feedback mechanisms that quench star formation in massive galaxies. Despite the richness of the multi-wavelength data available for these galaxies, the accurate determination of their rest-frame properties suffers greatly from imprecise distance estimates. We propose to use GEMINI/GMOS to remedy this situation by confirming the

redshifts of 24 H-K selected galaxies. The spectra will allow us to search for evidence of feedback in the form of AGN activity and superwind outflows, which is critical for testing models of massive galaxy formation at early cosmic times.

Tiempo asignado: esta propuesta fue dividida en dos en 13a con 15 horas y 13b con 25 horas.

Propuesta: G/2008A/009

Investigador Principal: Radostin Kurtev

Título: Constraining the mass and temperature of Oph162225-240515 - the first binary consisting of two free floating planetary mass bodies

Resumen: Oph 162225-240515 is the first binary consisting of two objects with masses comparable to those of extra-solar giant planets. The coevality of the two and several lines of evidence that confirm their youth suggest that they form a physical binary (physical separation ~240 AU). Our original study (Jayawardhana & Ivanov 2006) yields masses of ~14 and ~7 M_Jupiter, for the primary and the secondary respectively, at an age of ~1x10^6 yr. A wide binary in the ultra-low-mass regime poses a challenge to the ejection models of brown dwarf formation. However, Close et al. (2007) and Luhman et al (2006) dispute our mass and/or temperature estimates. This prompted us to obtain new temperature estimates for the two components of the system, that can constrain better the masses of the two components. The high-res spectra will also be used to obtain better T_eff estimates via model comparison.

Tiempo asignado: 17 horas

Investigador Principal: Simon Casassus

Título: Crystalline silicate grains in NGC6302 - disk or extended emission?

Resumen: The ISO mission revealed an array of sharp crystalline silicate emission features longwards of 17um in the spectra of many evolved sources. While some of these objects have O-rich exciting stars, as expected, a surprising number have C-rich exciting stars as well as strong PAH-like features shortwards of 14um - these have been dubbed dual-dust chemistry objects. Current interpretations point to binarity as being a key common thread, with previous evolutionary phases having resulted in the creation of compact disks or tori that harbour the cold crystalline silicates. To confirm this scenario and to distinguish it from alternatives in which the cold crystalline silicates are located in outflows or in Oort Clouds at much larger radii, high spatial resolution spectroscopy in the 20um region is required. Only an 8-m telescope can provide the required angular resolution. We request long-slit spectra and direct images with TReCS for a case study of NGC6302.

Tiempo asignado: 12, 5

Propuesta: G/2008A/002

Investigador Principal: Tom Richtler

Título: The faint galaxy content of the Antlia cluster: BCD galaxies.

Resumen: The aim of this long term project is to perform the first spectroscopic study of the faint galaxy content of the Antlia cluster and, in this proposal, we are focusing on the Blue Compact Dwarf (BCD) candidates. This galaxy cluster is the nearest one (d=35 Mpc) after Virgo and Fornax, and its galaxy density is even higher than in these two well investigated clusters. However, the Antlia cluster has not been studied with detail in the optical. We are now undertaking the first deep CCD photometric survey of dwarf galaxies, which is the basis of the present follow-up spectroscopic study. Three GMOS fields in the central region of Antlia are now requested, which contain one BCD galaxy each, plus other dwarf candidates (down to $R_T = 20.5$ mag), as well as UCD and globular cluster candidates. First scientific objectives deal with membership and kinematics (none of the targets has previous radial velocities) and, for a brighter dwarf subsample that includes the BCDs, with population properties. As BCDs are the most metal-deficient star-forming galaxies known in the Universe, they represent nearby laboratories for studying star formation and other physical processes in nearly primordial conditions.Remark: This proposal (unmodified) already got Argentinian time (8.1 h, band 1), but has been

Tiempo asignado: 7, 9 horas

Investigador Principal: Jose Gallardo

Título: Estimating mass accretion rates on intermediate- and low-mass pre-main sequence stars in the young open cluster NGC 6530

Resumen: Very young open clusters are crucial systems for studying star formation processes. NGC 6530 is a star formation region located in the M8 giant molecular cloud with stars having a median age of 2 Myr. This young open cluster is, in particular, a extremely interesting place to investigate the evolution of pre-main sequence stars. Specifically, several studies have been dedicated to observe a large sample of stellar objects in this cluster, classificating them as active young accreting stars. We propose to determine mass accretion rates and to improve known parameters like stellar luminosity and effective temperature using high resolution spectroscopic observations for intermediate- and low-mass young pre-main sequence objects in the aforementioned cluster. We also attempt to confirm their masses and ages using theoretical evolutionary tracks taking into account accretion process developed by Gallardo et al. (2007).

Tiempo asignado: 4 horas

Propuesta: G/2008A/014

Investigador Principal: Ovidiu Vaduvescu

Título: The ABCs of BCDs: Hydra Cluster

Resumen: Recent studies of the near-infrared (NIR) properties of dwarf irregular galaxies (dls) and blue compact dwarfs (BCDs) observed in the field and nearby clusters have provided improved estimates for the NIR luminosity of old stellar populations in these galaxies (Vaduvescu et al, 2005; Vaduvescu, Richer & McCall, 2006). Knowledge of the evolutionary status of BCDs is pivotal to understanding the origin of other kinds of dwarfs, most especially dwarf spheroidals (dSphs), and the nature of faint blue galaxies at higher redshifts. Recent chemical studies of dwarfs have shown that field dls and Virgo BCDs appear to share a common relation between the oxygen abundance and the luminosity in K (Vaduvescu, McCall & Richer, 2007). The correlation between metallicity and the gas fraction appears to be the same for BCDs as for dIs, suggesting that BCD evolution is similar to that of dls. An incoming run on Gemini-South is expected to bring new data for about 6 BCDs in Fornax Cluster. Based on these results, we will be able to start tracing the evolution of BCDs with respect to dls in different environments, and in so doing to pinpoint the physical parameters controlling dwarf evolution. In the present application we propose to scrutinize the evolution of BCDs with respect of dIs in a new environment. We propose to use GMOS on Gemini South in Band 3 conditions in order to measure accurate oxygen abundances in about 6-10 BCDs in Hydra cluster. This proposal has two main science objectives: to study the chemical evolution of BCDs with respect to dls, and to evaluate

Tiempo asignado: 20 horas