

Resultados del Concurso 2007B para Observaciones en Gemini-Sur

Propuesta: G/2007B/152

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, 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 running a successful.

Tiempo asignado: 10 horas

Propuesta: G/2007B/153

Investigador Principal: Paulina Lira

Título: Black-hole mass and growth rate at high redshift

Resumen: Our recent GNIRS study of high and intermediate-luminosity quasars at redshifts of $\sim 2-3$ shows a wide range of accretion rates (\dot{M}), similar to those found at lower redshifts ($z < 0.75$). This is contrary to theoretical expectations of a 'down-sizing' scenario of growth for Black Holes (and presumably their hosts), which predicts that all high- z , large-mass BHs should accrete close to their Eddington limit. The very small growth rate of some sources imply that there must have been an earlier epoch of very fast mass assembly at $z > 3$. We want to test this scenario by measuring the growth rate of very massive BHs at $z \sim 4.8$, by using the most accurate methods for mass and accretion rate determination. To achieve this goal we require high-quality GNIRS H-band spectra for 30 high- z QSOs. This semester we are applying to obtain data for 13 of such targets.

Tiempo asignado: 21.5 horas

Propuesta: G/2007B/154

Investigador Principal: Sebastian López

Título: Rapid Spectroscopy and Imaging Follow-up of gamma-Ray Burst Afterglows on the Gemini Telescopes.

Resumen: The Swift satellite has revolutionized the study of gamma-ray bursts by providing unprecedented numbers of accurate real-time localizations. 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 high redshift ($z > 6$) has important implications for understanding the bursts themselves as well as informing the role of future missions (eg. JDEM, EXIST). 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 reionization epoch. To this end, our proposed semester 2007B ToO program also seeks to uncover a number of damped-Lyman alpha systems as well as improve the (troublesome) statistics of strong intervening Mg II absorbers towards GRB sightlines.

Tiempo asignado: 3 horas

Propuesta: G/200B/155

Investigador Principal: Nelson Padilla

Título: An optical spectroscopic survey of 4micron-selected massive galaxies

Resumen: While most of the massive galaxies in the local universe are early-type, i.e. passively evolving, massive galaxies at $z > 1$ are found to have various levels of star formation activity. A most extreme case is that of submillimetre galaxies at $z \sim 2$ with star formation rates (SFR) of $> 10^3 M_{\text{sun}}/\text{yr}$ and stellar masses estimated to be $10^{11} - 10^{12} M_{\text{sun}}$ (Borys et al. 2005). Another class of massive galaxies at similar redshifts are the NIR-selected galaxies including colour-selected galaxies such as distant red galaxies (DRGs) and BzK-selected galaxies. A significant fraction of NIR-selected massive galaxies were detected at 24microns with the Spitzer telescope (e.g. Daddi et al. 2005), which indicates that they are ultraluminous infrared galaxies (ULIRGs). On the other hand, old and dead massive galaxies (i.e. with no star formation activity) are also found in the same redshift range (e.g. Labbe et al. 2005). In order to confirm the existence of "young" massive spheroids at $z > 1$ with un neglectable on-going star-formation and rich ISM with metal enrichment, we propose the GMOS observation targeting to candidates from the SXDS/SIRIUS field selected using the SWIRE/IRAC 4 micron sources. This will allow us to confirm these are star-forming galaxies at these redshifts.

Tiempo asignado: 36.3 horas

Propuesta: G/2007B/156

Investigador Principal: Ricardo Salinas

Título: Where dark matter shines: Dynamics of Abell 545 and its "star pile"

Resumen: Even though clusters of galaxies are believed to be completely filled with dark matter, the study of dark matter at the center of a cluster, where the CDM paradigm is most vulnerable, is usually complicated by the presence of a massive cD galaxy. An ideal place to study DM is one with a low baryonic matter density; this is the case of the core of Abell 545, an extremely massive cluster of estimated 1.5×10^{15} solar masses, in which the center is populated by low-mass galaxies immersed in a low-luminosity cD-like halo. Our GMOS-spectra, although still of low S/N, provided the first proof that this halo is indeed a cluster component. Here we propose to continue our study of this "star pile" and its surroundings. We aim at measuring the velocity dispersions of the star pile and of the surrounding innermost galaxy population. Abell 545, due to its expected very high central dark matter density in case of a cuspy core, is an ideal test object distinguishing between cuspy and core dark halos. Moreover, it could decisively test alternative concepts like MOND, since the predicted MOND velocity dispersion is much lower.

Tiempo asignado: 11 horas

Propuesta: G/2007B/161

Investigador Principal: Eduardo Unda-Sanzana

Título: The ABCs of BCDs

Resumen: Recent studies of the near-infrared (NIR) properties of dwarf irregular galaxies (dIs) and blue compact dwarfs (BCDs) 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 $z \sim 1$. Recent chemical studies of dwarfs have shown that field dIs and Virgo BCDs appear to share a common relation between the oxygen abundance and the luminosity in K (Vaduvescu, McCall, & Richer 2007). Moreover, 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 dIs. Based on these results, it has become possible to trace the evolution of BCDs with respect to dIs, and in so doing to pinpoint the physical parameters controlling dwarf evolution. In the present application the authors propose to scrutinize the evolution of BCDs with respect of dIs even further. We propose to use GMOS on Gemini South to measure oxygen abundances in 10 BCDs in Fornax cluster. This proposal has two main science objectives: to evaluate the chemical evolution of "clean" BCDs with respect to dIs, and to evaluate the effect of the environment on the evolution of BCDs. An additional result of this study will be the comparison of the chemical evolution of BCDs in the Virgo and Fornax clusters. Masses and gas fractions for cluster BCDs and a control sample of field dIs are being quantified through NIR

Tiempo asignado: 10 horas
