XIV Latin American Regional IAU Meeting (Florianópolis/SC, Brazil, 25-30 November 2013)
Editors: A. Mateus, J. Gregorio-Hetem & R. Cid Fernandes

similar to the method to measure photometric redshifts by Benitez (2000). 3) A result-analyser module: streamlines data analysis from the large output PDFs files. A fourth module to manage 3D data is being developed and a few preliminary tests are also shown.

To investigate the reliability of results obtained by MagAl, we have created a mock galaxy sample for the ALHAMBRA survey filter system (http://alhambrasurvey.com) and tried to recover their physical properties. We show that for our sample of simulated galaxies we can measure stellar ages, metallicities and extinctions with a precision of less than 0.3 dex. Also, we apply the code to the ALHAMBRA survey catalog and show that we can measure stellar masses with an accuracy of 0.2 dex when comparing to previous results like COSMOS masses measured by Bundy et al. (2006).

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A DATA-DRIVEN APPROACH TO THE EMISSION LINE PROPERTIES OF STAR-FORMING GALAXIES

L. Sodre Jr.[1] and A. Albernaz Sirico[1]

We present a quantitative analysis of the correlations between the equivalent widths of optical emission lines for a sample of more than 70,000 star-forming galaxies with high S/N SDSS spectra and with spectral synthesis performed with the Starlight software. We show, using statistical tools such as the distance correlation and maximal information correlation, that there are indeed strong correlations between the most prominent emission lines usually detected in the optical region of galaxy spectra. We have done, also, a Principal Component Analysis (PCA) of the synthesized continuum spectra and used up to 10 components to train an artificial neural network to estimate the equivalent widths of the emission lines, with excellent results, demonstrating that there is a strong correlation between the continuum and equivalent widths. The same analysis was performed with the symbolic regression software Eureqa, which provided functional relations between the four principal components and the equivalent widths, with an accuracy between 0.12 and 0.24 dex for different emission lines. The main motivation behind this work is to produce realistic spectra for tests of data reduction pipelines of the new generation of galaxy surveys, like J-PAS and PFS/SuMIRe.

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THE NEBULATOM COOKBOOK

G. Stasińska[1] and C. Morisset[2]

We present a series of problems on nebular physics with detailed comments and solutions in python. Their aim is to lead the student to a better understanding of the respective roles of the different processes at play in ionized nebulae, and to use with proper insight some tools that have been developed for the analysis of nebulae. These problems have been proposed at the NEBULATOM workshop in Choroni (Venezuela, 3-16 March 2013), a capacity development workshop for Latin American astronomers on emission-line objects in the Universe. They can be downloaded from https://sites.google.com/site/nebulatomtools/

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PHYSICAL CONDITIONS OF A HII GALAXY WITH EXTRAORDINARILY DENSE NUCLEUS: MRK996

E. Telles[1], T. X. Thuan[2], Y. I. Izotov[3], and E. R. Carrasco[4]

We present an integral field spectroscopic study with the Gemini Multi-Object Spectrograph (GMOS) of the unusual blue compact dwarf (BCD) galaxy Mrk 996.

We show through velocity and dispersion maps, emission-line intensity and ratio maps, and by a new technique of electron density limit imaging that the ionization properties of different regions in Mrk 996 are correlated with their kinematic properties. From the maps, we can spatially distinguish a very dense high-ionization zone with broad lines in the nuclear region, and a less dense low-ionization zone with narrow lines in the circumnuclear region. Four kinematically distinct systems of lines are identified in