

velocity field. The electron density map obtained from the [SiII] $\lambda\lambda 6731/6716$ line ratio shows values between 100 cm^{-3} the nucleus to 900 cm^{-3} in a ring of high densities.

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MORPHOLOGY AND ABSOLUTE MAGNITUDES OF THE SDSS DR7 QSOs

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The ESA mission Gaia will furnish a complete census of the Milky Way, delivering astrometrics, dynamics, and astrophysics information for 1 billion stars. Operating in all-sky repeated survey mode, Gaia will also provide measurements of extra-galactic objects. Among the later there will be at least 500,000 QSOs that will be used to build the reference frame upon which the several independent observations will be combined and interpreted. Not all the QSOs are equally suited to fulfill this role of fundamental, fiducial grid-points. Brightness, morphology, and variability define the astrometric error budget for each object. We made use of 3 morphological parameters based on the PSF sharpness, circularity and gaussianity, which enable us to distinguish the "real point-like" QSOs. These parameters are being explored on the spectroscopically certified QSOs of the SDSS DR7, to compare the performance against other morphology classification schemes, as well as to derive properties of the host galaxy. We present a new method, based on the Gaia quasar database, to derive absolute magnitudes, on the SDSS filters domain. The method can be extrapolated all over the optical window, including the Gaia filters. We discuss colors derived from SDSS apparent magnitudes and colors based on absolute magnitudes that we obtained tanking into account corrections for dust extinction, either intergalactic or from the QSO host, and for the Lyman α forest. In the future we want to further discuss properties of the host galaxies, comparing for e.g. the obtained morphological classification with the color, the apparent and absolute magnitudes, and the redshift distributions.

KINEMATICS AND EXCITATION OF THE NUCLEAR SPIRAL IN THE ACTIVE GALAXY ARP 102B

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We present a two-dimensional analysis of the gaseous excitation and kinematics of the inner $2.5 \times 1.7 \text{ kpc}^2$ of the LINER/Seyfert 1 galaxy Arp 102B, from optical spectra obtained with the GMOS integral field spectrograph on the Gemini North telescope at a spatial resolution of $\approx 250 \text{ pc}$. Emission-line flux maps show the same two-armed nuclear spiral we have discovered in previous observations with the HST-ACS camera. One arm reaches 1 kpc to the east and the other 500 pc to the west, with a 8.4 GHz VLA bent radio jet correlating with the former. Gas excitation along the arms is low, with line ratios typical of LINERs. The gas density is highest at the nucleus and in the northern border of the east arm, at a region where the radio jet seems to be deflected. Centroid velocity maps suggest that most gas is in rotation in an inclined disk with line of nodes along position angle $\approx 88^\circ$, redshifts to the west and blueshifts to the east, with lower blueshifts correlated with the eastern arm and radio jet. This correlation suggests that the jet is interacting with gas in the disk. Channel maps show blueshifts but also some redshifts at the eastern arm and jet location which can be interpreted as originated in the front and back walls of an outflow pushed by the radio jet, suggesting also that the outflow is launched close to the plane of the sky. We propose a scenario in which gas has been recently captured by Arp 102B in an interaction with Arp 102A, settling in a disk rotating around the nucleus of Arp 102B and triggering its nuclear activity. A nuclear jet is pushing the circumnuclear gas, giving origin to the nuclear arms.

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TWO-DIMENSIONAL KINEMATICS OF THE CENTRAL REGION OF NGC 2110

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We present a two-dimensional mapping of the central region of the active galaxy NGC 2110, using K-band integral field spectroscopy with the Gemini NIFS at a spatial resolution of ≈ 25 pc. We present flux distributions and kinematics for the molecular and ionized gas emission lines, as well as the stellar kinematics. The maps for the kinematics and flux distributions of the emitting gas for NGC 2110 were obtained by fitting the $\text{H}_2 \lambda 2.1218 \mu\text{m}$ and $\text{H I } \lambda 2.1661 \mu\text{m}$ emission-line profiles by Gauss-Hermite series. The H_2 presents extended emission in the whole field of observation, while the $\text{Br}\gamma$ is extended only to the southeast – northwest direction. The H_2 emission is consistent with emission of gas excited by thermal processes, such as gas heated by X-rays from the AGN or shocks. We estimated an excitation temperature of $\approx 2100 - 2700$ K for H_2 emitting gas. The gas velocity fields present a similar rotation pattern than those observed for the stars. In addition, the H_2 velocity field presents other kinematic components. Two spiral structures are observed in blueshifts to the north of the nucleus and redshifts to the south of it. If these kinematic structures are originated from emission of gas located in the plane of the galaxy, they can be interpreted as gas flows towards the nucleus (inflows) of the galaxy. In this case, the mass inflow rate is estimated to be $\approx 4.1 \times 10^{-4} M_\odot \text{ yr}^{-1}$. Another kinematic component observed for H_2 emitting gas was interpreted as an ejection of gas from the nucleus (outflows) within a bi-cone with a mass outflow rate of $\approx 4.6 \times 10^{-4} M_\odot \text{ yr}^{-1}$.

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UNVEILING THE LINER NATURE OF NGC1052

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NGC 1052 is an E4 galaxy and classified as a typical LINER harboring a stellar rotating disk. However, the central region is spectroscopically unusual with broad optical emission lines, the nature of its emission line gas remains unclear. According to recent studies NGC 1052 exhibit $\text{H}\alpha$ luminosities an order of magnitude above that estimated for an evolved population of extreme horizontal branch stars. Their $\text{H}\alpha$ equivalent widths and optical-to-near infrared (NIR) spectral energy distributions are consistent with them being young stellar clusters aged < 7 Myr, and according to previous works, NGC 1052 may have experienced a merger event about 1 Gyr ago. There are mainly three possibilities to explain LINER's spectra: i) post asymptotic giant branch stars (post-AGB) that ionize their rapidly expanding shells, (ii) active galactic nuclei (AGNs) powered by the in fall of matter into an accretion disk, and (iii) shocks. The stellar population (SP) of AGNs shows an excess of intermediate age stars. Besides, NIR stellar population studies have revealed that the continuum of active galaxies is dominated by the contribution of intermediate age stellar populations. Hot dust emission unresolved is also commonly detected in NIR nuclear spectra of galaxies Seyfert and LINERs. Aimed to discriminate the dominant ionizing source of NGC 1052 we present preliminary results of high spatial resolution integral field spectroscopy, taken with gemini NIFS to map the dominant stellar population, as well as disentangling the featureless and hot dust components.

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GAP FORMATION IN CIRCUMBINARY AGN DISKS

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