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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 $H_2\,\lambda\,2.1218\,\mu$m and H I $\lambda\,2.1661\,\mu$m emission-line profiles by Gauss-Hermite series. The H_2 presents extended emission in the whole field of observation, while the Brγ 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 $\approx 4.1 \times 10^{-4}\,M_\odot\,yr^{-1}$. 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 $\approx 4.6 \times 10^{-4}\,M_\odot\,yr^{-1}$.

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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 Hα luminosities an order of magnitude above that estimated for an evolved population of extreme horizontal branch stars. Their Hα 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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