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NGC 1068 is the brightest and most studied AGN in the sky. Its study motivated the development of the Unified Model for AGN as the prototype of an obscured Seyfert 1 galaxy. The opportunity of studying such object, with IFU spectrographs in the near infrared, allow us to understand the details of how gas is being fed to the central black hole and how the gas is being ionized and ejected from the center. We re-analyzed data taken from the SINFONI (VLT) and NIFS (GEMINI North) public archives, in the HK bands with spatial resolution of 0,1 arcsec (1,7 pc/spaxel). We concentrated our analysis on the molecular H2 lines, the low ionization line [Fe II] and the high ionization line [Si VI]. The analysis shows very distinct behavior for the different lines. In particular we found a clear structure resembling a "glowing-hourglass" shape for the low velocity [Fe II] emission, while the high velocity emission fills the "hourglass". The shape of this image suggests that the dusty torus and the ionization axis, possibly associated to the central accretion disk, are not co-planar. The primary wind is probably originated from this asymmetry while the secondary wind is likely to be originated from an H2 emitting cloud, about 1" to the north of the AGN, impacted by the primary wind and ionized by the central source.

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THE ROLE OF AGN FEEDBACK IN THE EVOLUTION OF SEYFERT GALAXIES

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Adaptive optics integral-field observations of Seyfert Galaxies have recently revealed clear evidence of AGN-driven outflows of ionized gas. By resolving the inner 10–20 parsecs, we are successfully modeling the geometry and kinematics of the outflows in 3D. The model parameters are used to estimate mechanical feedback from the AGN and test unification models. The mass outflow rates are 2–3 orders of magnitude greater than the accretion rates, but they are comparable to the estimated inflow rates to the central 10–25 pc, suggesting that the outflows may remove a considerable amount of the infalling gas before it reaches the accretion disk. The outflows seem to form two distinct groups which differ by outflow power variations with radio flux. While powerful outflows (with kinetic powers > 1.0% Lbol) are observed in objects with extended radio jets, in the other AGN – in which the outflow power is less than 0.1% Lbol – the radio jet is weak and compact.

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PROBING AGN ACCRETION THROUGH GRAVITATIONAL MICROLENSINGS OF QSOS

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Understanding QSO accretion is both at the frontier of new physics, and essential in understanding the driving force behind the great power of QSOs and their energetic feedback onto their galactic environments. However, the accretion disks are at micro-to-nano arcsecond scales, unresolvable from Earth. Gravitational microlensing of QSOs provides statistical information on the microarcsecond structure of the lensed QSO. By measuring the flux ratio in two of the lensed images and comparing to a lens models for the intervening galaxy, I intend to establish upper limits on the size of the emission region.

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CHARACTERIZING THE CONTINUUM IN NARROW LINE SEYFERT 1 GALAXIES

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Narrow Line Seyfert 1 (NLS1) active galactic nuclei (AGN) are a subclass of AGN with Seyfert 1 characteristics but without prominent broad lines. In this work we approach the determination of the non-stellar continuum using the spectral synthesis technique. We chose a sample of 130 NLS1 available in the Sloan Digital Sky Survey (SDSS). This sample comprehend all the objects of such class catalogued on the local universe (z<0.1). With this method we determined (a) central black hole masses, (b) accretion rates, (c) electronic densities in the narrow line region. We found and analyzed possible relations between this parameters.

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