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the fraction of light coming from young stellar populations, here denoted by LFYS, in a volume-limited sample from the SDSS DR7 catalog. We then classify as PSB those galaxies with LFYS larger than 70%, log([NII]λ6584/Hα) higher than -0.4 and Hα equivalent width (EW Hα) smaller than 5 Å. These two last criteria select galaxies without current star formation (Cid Fernandes et al. 2011). When plotting this sample in the BPT diagram, we identify a high occurrence of LINER and Seyfert hosts, as found by Yan et al. (2008). However, using the WHAN diagram, we show that most of post-starburst galaxies with low emission lines are in fact passive galaxies, frequently misclassified as weak AGN hosts.

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ACTIVE GALACTIC NUCLEI

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Accreting supermassive black holes have had a large impact in the evolution of their host galaxies, and even inject significant energy into their host cluster of galaxies. Although the black hole's influence in these large structures is evident, the central engine itself is remarkably difficult to observe. Their extremely compact nature makes it impossible to resolve the final source of fueling, the accretion disc, although interferometric observations have started to reveal important details of the material directly outside this region. In this work I review the techniques that have shed light into the structure and behavior of these central engines in the quest to find out how black hole grow.

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TESTING THE PHYSICAL PROPERTIES OF THE UNIFIED MODEL FOR AGN

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The Unified Model (UM) suggests that different AGN classes are due to the presence of a torus, which under different view angles can obscure the supermassive black hole and the broad line region. We analyze statistically the physical parameters of a sample of about 100 Seyfert galaxies using public data from Spitzer telescope in the mid infrared (5.2-38 μm) in order to verify the UM. We compare the spectral energy distributions (SEDs) with $\sim 10^6$ theoretical SEDs which consider that the torus is formed by dusty clouds and present the results for 8 CLUMPY parameters.

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TWO-DIMENSIONAL KINEMATICS OF THE CENTRAL REGION OF NGC4501 FROM GMOS/GEMINI INTEGRAL FIELD SPECTROSCOPY

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We present two-dimensional stellar and gas kinematics in the central region of the Seyfert 2 galaxy NGC 4501 from optical Integral Field Spectroscopy obtained with Gemini Multi-Object Spectrograph (GMOS) at Gemini-North telescope. The final data cube contains $\sim$16000 spectra covering the inner 7" $\times$ 15" at spatial resolution of $\sim$ 50 pc and covering the spectral region from 5600 Å to 7000 Å at a spectral resolution of 2.7 Å (FWHM). Two-dimensional maps for the flux, velocity and velocity dispersion (σ) were obtained from the fitting of the emission-line profiles of Hα, [N II] $\lambda\lambda$ 6548,6584 and [S II] $\lambda\lambda$ 6717,6731. All lines present extended emission to up to 5" the peak of flux of the nuclear at it. The gas velocity field for all lines are similar, being dominated by rotation in the plane of the galaxy with a velocity amplitude of 100 km^{-1}, although deviations from rotation are seen at some locations. On the far side of the galaxy we observed blueshifts and on the near side redshifts along spiral structures, being interpreted as inflows towards the nucleus of NGC 4501. The forbidden lines show σ values ranging from 50 to 150 km s^{-1} while the Hα shows overall smaller values, with the highest ones reaching $\sim$ 100 km s^{-1}. The highest σ values for all emission lines are observed at 2-3 arcsec northeast from the nucleus, being co-spatial with a distortion seen in the