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Probing the AGN/galaxy coevolution in the widest dynamical range ever

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The existence of a long-lasting link between the central black hole mass and various physical properties of their host spheroids is now a matter of fact. Studying the correlations between the two at different ages is then the best way to rebuild their cosmic evolution.
Within this scenario, we have built up two complementary AGN samples able to probe the accreting phases at both a) very high luminosity (>10^47 erg/s) and BH masses (10^9-10 Msol), i.e. the WISSH Sample, and b) very low luminosities (~10^43 erg/s) and BH masses (~10^5 Msol), i.e. studying sources extracted from the SWIFT/BAT catalog.
By performing AGN-dedicated SED-fitting procedures we derived the main physical properties of both the nuclear engine and the host galaxy of these sources, i.e. bolometric luminosities, star formation rates and stellar masses. We will present the accreting and star formation properties of these sources, comparing the two classes of objects.
Moreover, we are able to constrain the BH-galaxy scaling relation over three orders of magnitudes in mass and to follow its evolution from z~3 to z~0. I will show that while the more massive galaxies populate the typical region of the already observed MBH-Mstar relation, the less massive ones are still on their way to reach the MBH-Mstar locus, especially obscured AGN which seem to be hosted in less massive galaxies compared to unobscured ones, given the same BH.
We will also present a new bolometric correction, separately for AGN2 and AGN1, which spans five orders of luminosity thus allowing to derive more accurate predictions on the accretion history of the AGN and their host galaxies.

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