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Presentation Requested: oral
Category: Role of AGN in Galaxy Evolution in the ALMA Era
Question: How does the AGN fraction evolve with redshift and in what types of galaxies? What is the contribution of AGN to the bolometric luminosity and energy budget in galaxies over cosmic time? How can ALMA and other new facilities help address these questions?

Probing the AGN/galaxy co-evolution through multi-wavelength observations

I will review the recent findings on the effect of accreting SMBHs onto the host galaxies in a large, complete, sample of X-ray and spectroscopically selected AGN from the COSMOS field. Using the rich multi-band photometry we explore the host galaxy properties (e.g. colours, mass, SFR) comparing them to normal galaxies, and studying their dependence on AGN nuclear obscuration. Moreover, I will also present recent results on the scaling relations between the properties of the BH and those of the host galaxy for a unique sample of reddened and X-ray obscured luminous QSOs at z>1.5.
I will conclude by showing near-IR AO high-resolution imaging of Mrk 231 (i.e. the prototype of a quasar blowing out the molecular gas), and IRAM-PdBI observations of ULAS J1539, a recently-discovered hyper-luminous ($L_{bol} > 10^{14} L_\odot$) QSO at z=2.7.