Abstract
I will present band 3 & 6 ALMA observations of the dust continuum and the CO(3-2) and CO(6-5) lines emission of GMASS 0953, a main-sequence star-forming galaxy hosting a moderate-luminous Compton-thick AGN at z=2.226.
Previous band 3 & 4 ALMA observations of the target at low angular resolution revealed that GMASS 0953 is characterized by a short gas depletion time-scale (<140 Myr), indicative that the galaxy is close to consume its gas reservoirs.
The angular resolution of our new data enables to measure for the first time the size of the dust and the molecular gas emission of this galaxy that we find to be extremely compact ($r_{dust}=1.57\pm0.19$ kpc, $r_{CO}=0.75\pm0.25$ kpc). We also find evidence that the molecular gas traced by the CO(6-5) line is rapidly rotating in a disk-like fashion ($V_{rot}=320\pm40$ km/s).
Spectroscopic tracers of neutral and ionized gas suggest that the galaxy is experiencing a powerful large-scale outflow of which we find marginal evidence also in the molecular gas component, consistently with a "quenching-in-act" picture.
In my talk I will briefly discuss our updated constraints on the properties of the inter-stellar medium of the source, with respect to previously published results. Then I will focus on the implications of the size of the molecular gas disk on the fate of the galaxy and describe the possible scenarios that lead to the formation of such a compact rotating core.