

Formation and chemical evolution of dusty galaxies at $z \geq 4$ (Luca Graziani)

Thursday, 12 September 2019 11:18 (18 minutes)

In this talk I will first review recent models of galaxy formation featuring the creation and evolution of dust in the ISM of galaxies recently observed in the early universe ($z > 4$). Processes of dust formation from stellar sources (see Marassi et al., 2019) will be discussed, with a particular emphasis on the modeling of dust stellar yields and the efficiency of the reverse shock process in destroying the dust created by supernovae (Ginolfi et al., 2018). The evolution of dust grains present in the various phases of the ISM, as well as their impact on the colors of these galaxies, will be then discussed in light of recent results of our semi-analytic models (Mancini et al., 2015,16). Finally, a new set of hydrodynamical simulations performed with the recently developed SPH code dustyGadget will be introduced and their predictions compared with an extended set of dust estimates in high redshift, normal star forming galaxies. Future radiative transfer simulations including dust (see Glatzle et al., 2019) will allow to investigate how the hot and cold ISM phases evolve in the first galaxies, under the effects of consistent radiative and chemical feedback.