SES16-2016-000258

Abstract for an Invited Paper
for the SES16 Meeting of
the American Physical Society

High redshift star formation and the assembly of the Hubble sequence

DUNCAN FARRAH, Virginia Tech

The assembly and evolution of galaxies across cosmic history can provide stringent tests of several fundamental physical parameters, including the nature of the dark matter quantum and the equation of state of dark energy. The last decade has been an exciting time for studies of galaxy assembly; observations have used both large-scale surveys and detailed studies of individual systems to measure the redshift evolution of star formation rates and black hole accretion, while hydrodynamical simulations can reproduce the statistical properties of observed galaxies and are starting to reproduce their internal structures. There remain however a number of fundamental open questions, including the physical mechanisms by which free gas is converted into stars and central black holes, the ways in which star formation and black hole accretion may affect each other, and the relevance of taxonomic structures such as spiral arms and bars. In this talk I will review the key advances made over the last decade in understanding galaxy assembly across the history of the Universe, and discuss some of the most insightful routes forward for studies of galaxy assembly over the next decade.