

Early galaxy formation and its large-scale effects

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Galaxy formation in the first billion years mark a time of great upheaval in our cosmic history: the first sources of light in the Universe, these galaxies ended the ‘cosmic dark ages’ and produced the first photons that could break apart the hydrogen atoms suffusing all of space starting the process of cosmic reionization. At the forefront of astronomical research, the past few years have seen cutting-edge instruments such as JWST and ALMA provide tantalising glimpses of such galaxies chaotically assembling in an infant Universe. I will show how this data has provided an unprecedented opportunity to pin down the reionization state of the Universe, understand the physical properties of early galaxies, shed light on their dusty nature and study the key physics driving their formation and evolution. Time permitting, I will try to give a flavour of how the first billion years can also provide a powerful testbed for Dark Matter models beyond “Cold Dark Matter”.

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