# Ionising photon budget in Cosmic Dawn II

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**Abstract**

A growing consensus seems to point towards the ionising UV light of galaxies having been the main driving force behind the reionisation process. The nature of these ionising sources is strongly linked to the state of ionisation of the IGM and its large scale emission. I analysed the ionising photon contribution of galaxies to the intergalactic medium, its relation to galactic properties such as mass and star formation, as well as the state of the IGM throughout the ionisation process. This study was carried out using the Cosmic Dawn II simulation, a new, massive, fully-coupled radiation-hydrodynamics simulation of galaxy formation during the Epoch of Reionization, performed with RAMSES-CUDATON, as an update of Cosmic Dawn I (Ocvirk et al. 2016), and was complemented by follow up simulations including metals and their relevant physics. I computed the amount of escaping ionising photons from the dark matter haloes during and before the EoR, as well as lines of sight throughout our simulations. I found that dark matter halos within 1e9 Msol and 5e10 Msol produce more than 80% of the ionising photons between z=8 and z=6. Less massive haloes are too dim, whereas brighter haloes are too few, dense, and opaque in their cores to provide a more significant contribution. As redshift decreases past z=8, this dominant mass interval moves to higher masses.

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