Preparing for JWST to unveil the sources of reionization: Resolving Mg II and other optical lines in confirmed LyC emitters

Understanding if and how galaxies contributed to reionize the universe constitutes one of the three principal science goals of the James Webb space telescope (JWST). During the epoch of reionization (EoR), the neutral IGM renders direct LyC detections very unlikely and thus difficult to measure, justifying the need for indirect LyC tracers. Several indirect methods have been proposed and tested on low-z galaxies emitting LyC photons. We now urgently need to validate and calibrate these methods as JWST will soon observe galaxies in the EoR. The Low-redshift Lyman Continuum (LzLCS) is the largest sample of local galaxies with Hubble Space Telescope LyC observations. We carried out integral field spectroscopy follow-up observations of 3 confirmed LyC leakers from this sample in order to test one of the most promising indicators of ionizing photon escape: the Mg II emission. Our HET/LRS2 observations allow spatially resolved analysis from the Mg II emission lines to the H-alpha emission line. These 3 galaxies have different LyC escape fraction (~0.1%, ~1% and 10%) which enabled us to test whether MgII traces the escape of ionizing photons. In this talk I will present our MgII maps — which unveil the hydrogen neutral gas geometry around these LyC leakers — and the comparison to other non-resonant line maps, like [OII] and Halpha. I will finally discuss the implications of our study for JWST to use MgII as a tracer of the LyC escape at the EoR.