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Measuring the escape fraction of ionizing photons

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The last phase transition of our Universe is Reionization, when the first galaxies emitted energetic photons that ionized the intergalactic medium (IGM). The escape of ionizing photons from complex galactic environments is a key process to understand Reionization. However, the opacity of the neutral high redshift IGM results in the need of indirect methods of studying ionizing photons. I will present such a method, using ISM absorption lines from low-ionization states of metals, for example SiII 1260A or CII 1334A. The depth of those lines has been used as an indicator of the covering fraction of neutral gas in front of young stars, leading to an estimate of the escape fraction of ionizing photons. I will show how I produce those lines from recent Radiation-Hydrodynamics simulations, and compare them with the escape fraction in those simulations, to test the effectiveness of the method.

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