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Probing Cosmic Dawn : determining the age of the most distant galaxies (Nicolas Laporte)

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Determining the period when the first galaxies emerged from a dark intergalactic medium represents a fundamental milestone in assembling a coherent picture of cosmic history. But the so-called 'Cosmic Dawn'period is not accessible yet directly by current ground-based and space telescopes. But it can be constrained following two different methods : simulations of the first population of galaxies or by measuring the age of the most distant galaxies. For the latter, a multi-wavelength approach combining photometric and spectroscopic data from the NIR to sub-mm is crucial. This technique allows to estimate the age of very high-redshift galaxies from either the shape of the 4000A break or the amount of dust formed. Our group is conducting deep spectroscopic surveys using X-Shooter/VLT and MOSFIRE/Keck combined with deep ALMA observations to probe the nature and properties (including age, nature, stellar mass, and SFR) of z>7 HST selected galaxies. During this talk I will present several results from these campaigns and discuss how future extremely large ground-based telescopes will help to probe Cosmic Dawn.

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