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Constraints to the evolution of Ly-alpha bright galaxies between z=3 and z=6

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Abstract Galaxies at high redshift with a strong Ly-alpha emission line trace massive star formation in the absence of dust, and can therefore be regarded as a prime signature of the first major starburst in galaxies. I will report results of the Ly-alpha search within the Calar Alto Deep Imaging Survey (CADIS). With imaging Fabry-Perot interferometer CADIS detects emission lines in three waveband windows free of night-sky emission lines at 700nm, 820nm, and 920nm with a typical emission flux detection limit of Flim>3X10^(-20)Wm^(-2). Candidate Ly-alpha-emitting galaxies are selected from the total emission line sample, which contains more than 97% of objects at z<1.2, by the absence of flux below the Lyman limit (B-band "dropouts"), and the non-detection of secondary emission lines in narrow band filters. For four of eight observed Ly-alpha candidates the emission line detected with the Fabry-Perot has been verified spectroscopically at the VLT. When compared to Ly-alpha surveys at z<3.5 even the upper limits set by our list of candidates show that bright Ly-alpha galaxies are significantly rarer at z>5 than the assumption of a non-evolving population would predict. Therefore we conclude that the Ly-alpha bright phase of primeval star formation episodes reached its peak at redshifts 3<z<6.