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High redshift Quasars selection with deep Optical & Near-IR photometry and Photo-z technique for EoR study

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We present the technique for selecting high redshift quasar candidates, $z \approx 6$–11, suitable for studying the Epoch of Reionization (EoR). Such technique is important for deep and resource-intensive spectroscopic follow-up to confirm the final identification of the sources as well as studying the Inter Galactic Medium (IGM) and its environment. We employ deep optical and near-infrared photometry from the 3.6-m Canada-France-Hawaii Telescope (CFHT) and the European Southern Observatory (ESO) 4.1-m VISTA telescope, respectively. The reduced data and catalogues are taken from the CFHT Legacy Survey (CFHTLS) D2 field and the public UltraVISTA survey Ultra-Deep stripes which have significant overlap on the COSMOS field, i.e. around RA=10:00:28 DEC=02:12:30. The sample of candidates are also pre-selected to avoid spurious detection from artefacts induced by bright stars (J < 16). We then apply a Photometric redshift (Photo-z) analysis on the samples of optical dropout sources based on the g, r, i, z (CFHTLS) and Y, J, H, K (UltraVISTA) photometry. The final sample of high redshift quasar candidates in the Ultra-Deep stripes (total area ≈ 1 deg^2) and their photo-z's are then reported with their likelihood estimations.

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