
Detection of the Damped Lyman-alpha systems in quasar spectra with machine learning algorithms

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Abstract

Damped Lyman-alpha absorbers (DLAs) are strong absorption systems in quasar spectra, which significantly affect the measurement of the correlation function of Lyman-alpha absorption and can complicate studies of Baryon Acoustic Oscillations (BAO) with Lyman-alpha forests. Based on mock quasar spectra and the DR16 data release of the extended Baryon Oscillation Spectroscopic Survey (eBOSS), we are studying different machine learning algorithms, e.g. CNN, Bayesian CNN, to improve the detection efficiency and the estimation of redshifts and column densities of DLAs, in order to create accurate DLAs catalog for the upcoming Dark Energy Spectroscopic Instrument (DESI) main survey.
Poster: in PDF

Video: <https://youtu.be/Rg7NQjh7MDM>

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