

SYMPOSIUM ON FUTURE SPACE ASTRONOMY AND SOLAR-SYSTEM SCIENCE MISSIONS (A7)
Interactive Presentations (IP)

Author: Ms. Jenny Yu
University of British Columbia, Canada, iennvvu@gmail.com

PHOTOMETRIC REDSHIFT ANALYSIS OF KILO-DEGREE SURVEY DATA USING
MACHINE-LEARNING TECHNIQUES**Abstract**

We present photometric redshift estimates for galaxies from an analysis of the most recent lensing data from the Kilo-Degree Survey (KiDS), released in 2015. We use existing redshift data available from other surveys to train and calibrate three supervised machine learning algorithms predicting categorical labels and compare their performance to each other as well as existing photo-z methods such as annz2 and bpz. We give particular emphasis to empirical machine-learning based methods as literature suggests they yield the best test results. The performance of the algorithms is validated by matching a weighted, constructed sample of spectroscopic redshifts to the results of our algorithm, with focus on the most relevant metrics for weak lensing analyses. Successful investigation will give a more accurate estimate on the distance of astronomical objects, which can be applied to astronomy and cosmology analyses. This research is ongoing and will be complete in July 2017.