

# machine learning based quasar detection in photometric surveys

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Broad spectroscopic lines, large redshift range and variety of properties make quasar detection in photometric surveys a particularly difficult task, and estimation of their photometric redshifts is even more challenging. I will present a quasar detection method based on photometric ugri data in Kilo-Degree Survey (KiDS) - an imaging deep and wide field survey covering 447 sq. deg. on the sky (Nakoneczny et al. 2019). The KiDS third data release contains 49 millions of sources among which, however, a vast majority does not have any spectroscopically confirmed identification. We successfully trained a Random Forest classifier based on the KiDS data and a set of known quasars identified by the SDSS spectroscopic survey. Our final catalog consists of 190,000 quasar candidates and its training purity equals 91%. Additional validation of the catalog was made by the means of comparison with GAIA second data release, other already existing quasar catalogs and WISE photometric data. Our method can be easily applied to the future LSST data, and developed further to make use of the LSST time domain data.

**Primary author(s)** : Mr NAKONECZNY, Szymon (National Centre for Nuclear Research, Astrophysics Division, Warsaw, Poland)

**Presenter(s)** : Mr NAKONECZNY, Szymon (National Centre for Nuclear Research, Astrophysics Division, Warsaw, Poland)

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