

Seminarium Studium Doktoranckiego NCBJ

Thursday, 23 April, 9:00

<https://www.gotomeet.me/NCBJmeetings/phd-seminar>

Speaker:

Szymon Nakoneczny (Studium Doktoranckie NCBJ)

Title:

Detection and redshifts of quasars in photometric surveys.

Abstract:

Quasars, being among the most luminous objects in the Universe, allow to probe the Universe back to the epoch of reionization. However, they are difficult to distinguish from other objects in photometric surveys, which lack the detail of spectroscopic observations, but supersede them in depth and covered sky area. I will present a catalog of quasar candidates together with their estimated redshifts, the basic observable in cosmology, based on machine learning (ML). The artificial neural network processes 45 millions of photometric and near-infrared observations in Kilo-Degree Survey (DR4) and finds 900k quasar candidates. The catalog purity equals 97%, and the redshift error is only 0.04. The quasars are tested for zero parallax with GAIA observations. I will address some of the key questions: how to properly test ML models; how to extrapolate between much brighter spectroscopic observations to much fainter photometric ones. Visualisations of high-dimensional feature space will help us to interpret the ML predictions.