

Retrieving exoplanet atmospheric parameters using random forest regression

Characterization of planetary atmospheres is a rapidly developing area. One method that is commonly used to study planetary atmospheres is transmission spectroscopy, which measures the variation of transit depth with wavelength. The retrieval process is one of important process for retrieve exoplanetary atmospheric parameters. However, the traditional retrieval method (e.g. MCMC and nested sampling) consumes a lot of computational time. Therefore, this work aims to apply the random forest regression, one of the supervised machine learning technique, to retrieve exoplanet atmospheric parameters from the transmission spectra observed in the optical wavelength. We found that the random forest regressor can be used for the retrieval, with acceptable accuracy and less computational time consuming compared to the standard fitting technique.

Primary authors: MUNSAKET, Patcharawee (Suranaree University of Technology); Dr AWIPHAN, Supachai (National Astronomical Research Institute of Thailand); Dr CHAINAKUN, Poemwai (Suranaree University of Technology)

Presenter: MUNSAKET, Patcharawee (Suranaree University of Technology)

Track Classification: Astronomy, Astrophysics and Cosmology