Contribution ID: **282** Contribution code: **S4 High Energy and Particle Physics** Type: **Poster Presentation**

Reveal chemical compositions in the exoplanetary atmospheres using the transmission spectroscopy technique

The Earth, without its atmosphere, would be a rocky planet with no oceans, clouds, or life. In order to discover the presence of extraterrestrial life, the chemical compositions of the exoplanetary atmosphere should be revealed. Until now, there have been thousands of exoplanets discovered, including more than 3,000 transiting exoplanets. Transmission spectroscopy technique, which studies exoplanetary atmospheres during their transits, is widely used to study the atmosphere of transiting exoplanets. Presently, this technique has been used to study the atmospheres of a number of exoplanets. Nevertheless, the tools and methods of exoplanetary analysis might differ in each work, which might provide different atmospheric parameters. Consequently, in this work, the 1,517 published transit light curves of 163 exoplanets are used to analyse their atmospheric composition using TransitFit and PLATON packages, python exoplanetary fitting packages based on nested sampling algorithms. The light curves were used to determine the physical properties and transit depth using TransitFit. Finally, there are 14 exoplanetary systems which can be analysed for their atmospheric compositions using the PLATON package.

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Session Classification: Poster: S4 High Energy and Particle Physics

Track Classification: High Energy and Particle Physics