

Amateur observations of exoplanets in Finland: History and recent activities

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Abstract

Exoplanets have been observed by Finnish amateur astronomers already 17 years. Recently there are two active observers, but the interest to photometric observations on exoplanet transits is increasing in Finland.

1. History

The first exoplanet transit observation in Finland was made by Jyväskylän Sirius observing group: Marko Moilanen, Jalo Ojanperä, Jouni Sorvari, Aki Id and Arto Oksanen on 16 September, 2000 [1]. The observation of HD 209458 exoplanet transit was made with 16-inch Meade telescope and SBIG ST7E CCD camera in Nyröla Observatory in Central Finland. The observation was confirmed by Geoffrey Marcy from University of California at Berkeley.

This was also the first amateur observation of exoplanet transits in the world. It started the rising interest on exoplanet observing among Finnish amateurs.

The observation was also one reason why NASA and Berkeley scientists founded Transitsearch.org network [2] for coordinating amateur exoplanet observations. Sirius group continued collaboration with newly founded Transitsearch.org.

Taurus Hill Observatory (THO) began the scientific research campaigns by observing supernovae and making the first amateur supernova discoveries in Finland. After success in supernova discoveries, THO concentrated mainly on the light curve measurements, especially exoplanets. First contacts between THO and the scientific community were with Gregory Laughlin [7] and his research partners in 2007. As the light curve measurements were in the high scientific level, THO further initiated research partnerships e.g. with TRESCA [5] and latest with the Pulkovo

Observatory (Russia) [6]. Nowadays THO has observed and measured over 50 exoplanet light curves.

2. Recent activities

Currently there are 2–3 amateur groups observing exoplanet transits in Finland.

Petri Kehusmaa is collaborating with KELT (Kilodegree Extremely Little Telescope) observation system [3]. The main goals for this cooperation are:

- multiband photometric observations of exoplanet candidates found by KELT wide field cameras and contributing light curve data to research team
- find new exoplanets

Kehusmaa is also working as support astronomer in CONTRAST team [4] which is collaboration of several projects on planetary science. Kehusmaa is observing two known exoplanet system to analyze their full period cycle. Kehusmaa is using remote controlled telescope in Chile.

During the winter 2016 – 2017 Taurus Hill Observatory has focused on the Pulkovo Observatory exoplanet research campaign by observing the carefully pre-selected stars. The aim of the observation campaign is to find out about the orbiting times of potential exoplanets around their central star and the magnitude of brightness change in the central star caused by them. This campaign will continue on the next observing seasons.

References

- [1] http://www.ursa.fi/yhd/sirius/HD209458/HD209458_eng.html
- [2] Transitsearch.org, <http://www.transitsearch.org/>
- [3] KELT-south, <https://my.vanderbilt.edu/keltsouth/>
- [4] CONTRAST, <http://www.hotmol.eu/index.shtml>
- [5] TRESCA, <http://var2.astro.cz/EN/>
- [6] Pulkovo Observatory,
<http://www.gao.spb.ru/english/index.html>
- [7] <https://www.ucolick.org/~laugh/>