# Activity 21. Discover an Exoplanet (EUC)

1. **Learning outcome(s):** (list up to 3)
   * 1. Learn the basic methods of detecting exoplanets.
     2. Gain experience in acquiring, cleaning and processing data.
     3. Gain experience in presenting the outcome of their activity.
2. **Relation of activity with the STEM, gender inclusiveness and Entrepreneurship:** (text, not bullets, explaining the relation of the activity to 3 above)

This activity will help male and female students experience how to make an astronomical discovery, i.e. discover an exoplanet by processing a set of real and/or simulated data. The activity will enable students discover the link between Science (in this case Astronomy), Computing, Data mining, and Data science. The activity will therefore stimulate the students to pursue a career in a STEM related subject and subsequently follow a STEM related career which may involve starting their own business in this area.

1. **Indicate the area of focus:**

**☐ STEM**

**☐ Gender inclusiveness**

**☐ Entrepreneurship**

1. **Materials:** (including ppts, videos, hands-on material)

* powerpoint presentation
* laptop(s)

1. **Preparation:**none
2. **Duration:** 90 (minutes)
3. **Target group:** 15-18 (student age)

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1. **Description of the activity:**

In this activity the students will explore using real and/or simulated data how to detect an exoplanet (a planet around another star) with the transit method. The basic idea of this method is to detect the small decrease of the brightness of a star when a planet passes in front of it. A code will be developed by the project to read the data from an excel file and process it in order to identify the planet (alternatively publicly available code e.g. from https://github.com/petigura/terra will be used). A presentation on exoplanets and methods of detecting them will proceed the activity.

The teacher will explain the exercise in 20’ and ask students to form in groups of 3 students. The objective of the exercise and the instructions are given within 10’ and then the team has 40’ to carry out the exercise and present the outcome to the rest of the students in 5’.

**9. Link to curriculum:**