The Star Hunt

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비가 AMERICAN ASTRONOMICAL SOCIETY

WORLDWIDE

Image Credit: NASA, ESA

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Abstract:

In the project The Star Hunt the scientists, who are astronomers, need help finding new stars that are being born from dusty interstellar clouds in our galaxy. Do these stars, form alone, as twins or clustered together in great broods? Students will analyse images taken in a variety of wavelengths of light, from radio to x-ray, by telescopes on the ground, in the air and in space. The scientists will provide a background to the research and instructions for analysis of the images. These will be provided via the webbased **WorldWide Telescope** platform, which interfaces with NASA and ESA databases. Each team of students will explore their own regions of the galaxy targeting particular interstellar clouds. The astronomers want to know about the surrounding environments of the clouds – for example, have they been impacted by recent supernova explosions or blasts of radiation? They want to discover if there are clusters of stars already formed that are hidden

in the dusty centres of the clouds. Here, we will show the educational project we have developed at the **Chalmers University of Technology** in Sweden in collaboration with the **Nobel Prize Museum**. In this project, about 1000 participating Swedish school students from about 30 schools will be the first Star Hunters as this is the first space-astronomy project offered by the museum. There will be a poster competition between the students and the winners will attend the **Nobel Prize Ceremony!**

13-15 julio 2020

Context

About Help a Scientist

Help a Scientist is a project under the auspices of the Nobel Prize Museum that brings together scientists, students and teachers

What is Help a Scientist?

In Help a Scientist, students are given the opportunity to try out real research in collaboration with top scientists in Sweden. Students gain a deeper understanding of what a research project can mean, and at the same time, the scientists get some help with their research. Our hope is that the pupils and teachers can contribute together with a small, but significant, piece of the puzzle in larger research projects

Help a Scientist is funded by the <u>Swedish Foundation for</u> <u>Strategic Research</u>



The **Star Hunt** will be the tenth edition of the Help a Scientist program. This year the project is about space and identifying stars together with three researchers from Chalmers University of Technology and it is the first space-related project! *The project is intended for highschool students (15-16 years old)*

Meet the Team Star Hunt:



NOBEL PRIZE MUSEUM



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Methodologies

What? How?

In the project The Star Hunt the astronomers need help to find new stars that are being born from dusty interstellar clouds in our Galaxy. Do these stars form alone, as twins or clustered together in great broods? The astronomers want to know about the surrounding environments of the clouds. They want to discover if there are clusters of stars already formed that are hidden in the dusty centers of the clouds.

Students will analyse images taken in a variety of wavelengths of light by different telescopes and will look for newly born stars and/or extended structures in these images. The images will be made available via the web-based World Wide Telescope software.

Image Credit: Bob Franke

We view this as a great opportunity spread knowledge about Astronomy, including Astronomy research, to a wide audience of young students, many of whom we hope will be inspired by the science to consider such topics for future studies and careers. We expect that all participating students would gain a greater appreciation of Astronomy, Space and our place in the Universe as a result of this project.



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Methodologies - The tool

News: WorldWide Telescope Visualization Tracks New Horizons

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The Star Hunt

Each pair of students will have a region in the sky

- Radio and infrared wavelengths will be used in the project
- The students will analyse the surroundings/ environments to help scientists in their research
 - The students will *hunt* stars by estimating the stellar density around these regions which will help to test theoretical models!
 - The students will produce astronomical images and there will be a competition for the best one!

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WorldWide Telescope Resources





Install WorldWide Telescope for







Resources for Educators



Learning tasks for the students

Star Formation

How astronomers observe Life-Cycle of the Galaxy, including our Sun

Telescopes Navigating the sky Angular distances Sense of scale in the Universe

Electromagnetic Spectrum - Build you own spectrograph

Specific questions to be answered

What is the closest bubble or structure to the protostar?How many stars are in the vicinity of the protostar?Is the protostar being born in a Giant Molecular Cloud?

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Image Credit: NASA, ESA

Impact and prospects for the future

This project will impact thousands of high-school students and have the potential to impact many more!

The current status of the project is: - The booklet with the background material and exercises is finalised in English and translated into Swedish - The WWT tool is well tested as well as the exercises after 4 pilots classes from which we have received useful feedback and made changes accordingly

- The entire project is self-consistent and can be adapted to a higher or lower level and translated to any language, in particular **Spanish**

Image Credit: NASA, ESA, and the Hubble 20th Anniversary Team (STScI)

We are looking for partners to share this project with Spanish schools.

We will be very excited to hunt stars together!

Send us your feedback to chalmers.star.hunt@gmail.com Optical (Hubble)

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