Educator Viewing Guide

IBEX: Search for the Edge of the Solar System (2009)
28 minutes

Join scientists who are investigating the boundary between our Solar System and the rest of our galaxy in IBEX: Search for the Edge of the Solar System. Designed for visitors with an appreciation for the challenges of space science and a desire to learn more about science research, *IBEX: Search for the Edge of the Solar System* follows the creation of NASA's Interstellar Boundary Explorer (IBEX). Audiences will get an in-depth look at the mission and how IBEX is collecting high-speed atoms to create a map of our Solar System's boundary.

Topics covered:

Space science, solar system, the Sun and its properties

Interdisciplinary connections: astronomy, physics

Key Terms and Concepts:

Atoms, Galaxies, Gravity, Heliosphere, Interstellar Medium, Magnetic Field, Oort Cloud, Orbit, Particles, Plasma, Solar System, Solar Wind, Sun

Combine with these KidSpace Activities:

Ballistics Lab
Take aim with space-themed ball blasters, jump, and climb while exploring science concepts: forces, gravity, resistance, energy, and more.

Launch Lab
Learn the force needed to send rockets into the air. Take aim with our stomp rockets while investigating science concepts: rocket design, force, gravity, altitude, resistance, and more.

PlaySpace!
Science begins with imagination. The space-themed playground offers many opportunities for space-themed play, space-related discoveries, and demonstrations of science concepts: gravity, friction, force, laws of motion, and more.

Learning Resources and Activities:

Create learning units designed around a visit to KidSpace! These web resources and activities are designed to illustrate concepts and ideas presented in the show. Many of these can be adapted to various age groups.

IBEX Informal Education Resources; NASA Southwest Research Institute
This resource is a comprehensive educator guide for learning about the IBEX space mission. These materials can be adapted for informal learning environments. Includes links to PowerPoint presentation with movie clips and several activities: *Four States of Matter, Mystery Matter, Achieving Orbit, Postcards from Space, and Particle Detection*.
http://ibex.swri.edu/planetaria/informalresources.shtml

Exploring the Universe: Objects in Motion; NISE Network
This resource contains all downloads needed for participants to explore the complex and predictable ways objects in the universe interact with each other. Includes learning goals and videos (Spanish and English available).
http://www.nisenet.org/catalog/exploring-universe-objects-motion-2018

Exploring Magnetic Fields; American Association for the Advancement of Science (AAAS)
This site contains lesson plans and directions for two activities designed to explore magnetic fields. Includes material list, directions, student worksheets, assessment and extensions.
http://sciencenetlinks.com/lessons/exploring-magnetic-fields/

Do it Yourself Solar System; Universe Awareness (European Union)
This site provides directions to complete an imaginative craft activity where children make the planets of the solar system using an icosahedron template, and then decorates with art materials. Includes background information and template downloads.
http://www.unawe.org/activity/eu-unawe1328/

Sun As a Star: Science Learning Activities for Afterschool; NASA Education
This educator resource guide provides background information and complete instructions for eight activities designed for elementary-age students: *What Do We Know About the Sun?, What Colors Are in White Light?, How Can We Find Out About Invisible Light?, How Does Light Travel?, What Can We Learn About the Sun from Shadows?, Does the Sun Move?, How Do Scientists Look at the Sun*?, and *Are All Stars Like the Sun?*
https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Sun_As_a_Star_Educator_Guide.html

NASA Space Place: Classroom Activities; NASA
This resource contains several space-related activities for the classroom. Must scroll down to find link to downloadable pdf of activity. Related activities include: *Telescope as Time Machine*, *Pluto or Bust!*, *Launch a Frisbee into Orbit, Design and Build Your Own Spacecraft* and more.
https://spaceplace.nasa.gov/classroom-activities/en/

Comprehension Questions

Help learners process the concepts and ideas presented in the show with these questions.

1. What is the Heliosphere and how is it related to the Sun, our solar system, and the Milky Way galaxy?
2. Why do scientists believe it is important to study the edge of our solar system?
3. What important information will the IBEX mission bring us?
4. What new information about the Sun and our solar system did you learn from this film? What surprised you? What questions do you still have?

Further Research and Discussion

Visit the IBEX website (http://ibex.swri.edu/index.shtml) to explore more information about the IBEX mission and findings. Learners begin with a question they have about the mission after viewing the film, and use online research to discover the answer.

This show covers content that addresses Colorado Academic Standard in Science (Physical Science and Earth Systems Science). See Planetarium Show Academic Standard Chart for details by grade.