

## **PJs for Astronauts**

Have you ever run outside in your pajamas on a chilly day to catch the cat or grab the newspaper? You were in the cold for only a moment, but by the time you closed the door, your toes were freezing and your nose was red. When you went back out later, you were sure to dress for the weather. An astronaut outside the space shuttle can be exposed to temperatures as high as 250 degrees Fahrenheit, and as cold as -250 degrees! That means he or she must wear special equipment to stay safe.

Temperature isn't the only hazard when an astronaut goes on an extravehicular activity (EVA). There's no air beyond Earth's atmosphere, so astronauts on space walks need oxygen to breathe. The oxygen in their suits also provides pressure, which holds their bodies together. Tiny rocks called micrometeoroids can hit astronauts, so space suits are designed to withstand a lot of punishment.

The computerized space suits carry extra oxygen, a life-support system, headphones and microphones for communication, and even water to drink and a way to pee in the suit but still stay dry. A complete space suit weighs 280 pounds on Earth, but doesn't weigh anything in space.

When the Space Shuttle Columbia carried the Chandra X-ray Observatory into space in July of 1999, the satellite was released into orbit from inside the shuttle. The release worked perfectly, but if it had not, the astronauts had their suits ready. They would have gone outside to fix the problem. The crew's suits would have kept them safe from extreme temperatures, lack of air and air pressure and debris flying through space.

Chandra now provides lots of information about high-energy objects in space, like exploding stars. For more information about Chandra and other telescopes, visit the Space Place website at <http://spaceplace.nasa.gov/chandra.htm>

*This article was written by Eric Elkins and provided by the Jet Propulsion Laboratory, managed by California Institute of Technology in Pasadena, CA, under a contract with the National Aeronautics and Space Administration.*

*Caption: Astronauts wave good-bye as they get ready to board the Space Shuttle for their mission to place the Chandra X-ray Observatory into orbit around Earth.*

