

Exhibits and Programming in Space Odyssey

(as of February 2015)

Space Odyssey's flexible design and emphasis on live programming make it possible for visitors to experience different things each time they visit. On-floor features and baseline content remain largely the same, but their context, usage, and focus change over time by virtue of changing gallery programming, targeted Museum Galaxy Guide facilitation, and the flexibility of digital media. This allows *Space Odyssey's* content focus to reflect current events and timely topics. Now, Immerse yourself in the universe. Challenge your thinking. Talk space. And have an out-of-this world experience!

Space Odyssey is committed to current topics and space news. Staff and volunteers get daily briefings and share what they learn with visitors. Exhibits and programs incorporate the latest data and pictures. Visitors participate in on-going scientific debates. Each time you visit, *Space Odyssey* will be different as it comes alive with information as fresh as today's headlines.

EXHIBITS AND FACILITATED EXPERIENCES:

OUTSIDE THE GALLERY

Mars Rover Exhibit and Exploration Station: As you approach Space Odyssey, you see a model of a Mars "robot geologist," one of the MER rovers, and watch a video of several Mars landings. If you're lucky, a Museum Galaxy Guide will be there with an exploration station too!

Entry Tunnel Images: You enter Space Odyssey through a long corridor, with spectacular backlit space images on either side taking you farther and farther from the surface of Earth.

PLANETARY LANDSCAPES

GeoConnecTable (Tilty Table Interactive): Onomy Labs, with Churchill Navigation and TerraColor, developed the GeoConnecTable. This intuitive interactive exhibit displays the entire Earth at once, and allows the user to zoom in close enough to see houses and cars. Funded by the Gates Family Foundation "Down to Earth" grant (see below).

Down to Earth (Rotating Rand McNally topographic globe): Explore the features of our own planet in this exhibit funded by a grant from the Gates Family Foundation. Find out how the space revolution has changed the lives of each of us, here and in several other exhibits funded by the same grant.

Make an Impact (Cratering interactive): Make your own crater as you fire a ball into a huge bin of sand and watch the playback of the impact in slow motion video. Simulate your experiment on a computer, or increase its size to see how bigger impacts can have catastrophic effects. You'll gain greater understanding of how impacts shape the surfaces of planets, and how craters give clues to a planet's age and environment.

"You don't have to be a rocket scientist to do rocket science" Space Work Rolling Exhibit: Do you like art? Computers? Costumes? Math? Gaming? Whatever your fort, this small exhibit highlights the kind of careers that are available in Colorado's extensive and booming space industry. Funded by the Gates Family Foundation "Down to Earth" grant.

Carving Landscapes (Stream Table): Get involved in one of the biggest debates in planetary science: The role of water on Mars. Use flowing water to carve landforms in simulated Martian soil. Then, search for similar patterns in photos of Mars. Were they also carved by water?

Face on Mars Interactive: This interactive helps you understand how a shadow on a geologic formation on Mars can be mistaken for something else. What can we learn from this that might help us identify geologic features on other worlds in the future?

Planet Families Computer Interactive: In this engaging activity developed by the Space Science Institute in Boulder, you can create your own solar systems by putting planets in orbit around various suns. Will your solar system survive, or will too much gravity make it implode?

Candor Chasma Diorama: Get an up-close view of Candor Chasma, a part of the “Grand Canyon of Mars,” as you imagine living and working on Mars in the year 2047. In the distance, 30,000-foot cliffs dwarf anything on Earth. Nearby buttes and rock formations look both familiar and exotic, and the tools of space exploration lie close at hand in this “future living history” exhibit. Space-suited performers bring the otherworldly scene to life each day.

Robotic Rover Interactive (due back online in March 2015): Can you successfully program a robotic rover in the Mars diorama to reach its designated targets? Learn why robotic assistance is both crucial and challenging in space.

Seeing Saturn: Explore our understanding of Saturn’s ring systems over the ages, and how space-based missions provide views of the ringed planet impossible to achieve from Earth.

Visitors from Outer Space Meteorite display: See REAL meteorites, found all over planet Earth, which came from many locations within our solar system—even Mars!

Meteorites Exploration Station: It’s not enough to just SEE meteorites! In this facilitated experience, you can hold them as well, and hear stories and explanations from a Museum Galaxy Guide.

Experiment Bar Facilitated Exhibit: Feel like you’re a scientist on Mars. Look for evidence of water on Mars. Model your own Martian landscape and see what it would look like from orbit. Analyze soil samples with a video microscope. Find out about core sampling. Hunt for hidden reservoirs of water using radar. And search for signs of life.

LIGHT AND RADIATION

Seeing the Sun: See the Sun the way astronomers do. View multi-wavelength images of our Sun that are updated daily and learn how astronomers track sunspots, coronal mass ejections and solar wind. Find out what we learn about our nearest star from radio waves, infrared light, visible light, ultraviolet light, and x-rays.

Telescopes Interactive: Look at a backlit image of a distant galaxy through three similar telescopes, each exhibiting a different facet of telescope operation showcasing how these indispensable instruments help us understand the universe we live in.

Infrared Experiments: See with “infrared eyes” and experience how surfaces reflect and absorb heat. These experiments will trigger your interest in infrared photography, how light works and how scientists learn about the materials and temperatures of distant objects in space. See yourself in IR at the adjacent portrait-mounted digital display!

Exploring Light: Experiment with filters and prisms, split and mix light, and learn about a fundamental tool of astronomy: analyzing light spectra of distant objects such as stars and galaxies.

Spitzer Milky Way Digital Kiosk: Check out the amazing imagery of the Spitzer space-based telescope and see its infrared compiled view of the Milky Way from our vantage point. “Fly” around the image and examine up close amazing features like the Orion Nebula.

Gas Tube Spectroscopy Exploration Station: Explore for yourself how scientists use spectroscopy to determine the chemical makeup of distant stars.

EXPLORING SPACE

Delta IV Rocket Model: Look up to see a scale model of the newest Delta IV rocket, courtesy of Colorado's own United Launch Alliance! Read about it in the adjacent label panels.

Science On a Sphere: Check out Science On a Sphere (SOS)®, a global display system that uses computers, four video projectors, and a six foot diameter spherical projection screen to display planetary data, analogous to a giant animated globe. Created at NOAA and funded by a grant from NASA, animated images of atmospheric storms, climate change, and ocean temperature as well as bodies in our solar system are shown on the sphere.

Shuttle Docking: Maneuver a frictionless space shuttle model via remote control and see if you can successfully steer and dock with the International Space Station. Learn about momentum, inertia and the challenges of carrying out tasks in space environments.

International Space Station Model: In one quadrant of the Shuttle Docking cylinder, check out this model of the International Space Station—with a tiny space-walking astronaut provided for scale!

Sputnik and Explorer I Spacecraft Models: Displayed in honor of the 50th anniversary of the Space Age, look up to see Russia's contribution—Sputnik—and our very own spacecraft too.

ULA Rocket Models Case: Courtesy of our friends at the United Launch Alliance, you can see several Delta and Atlas launch vehicles, side by side at the same scale.

Space Spinoffs Digital Kiosk: Learn about technologies, created in the quest to explore space, which we use every day. Funded by the Gates Family Foundation "Down to Earth" grant.

Mission Board: Get the latest space science news via satellite. Learn about day-to-day activities in space and get a running update of upcoming and ongoing space missions.

Hubble Space Telescope Model: The Hubble Space Telescope was designed to provide clear and deep views of distant galaxies and stars and most of the planets in our solar system. Hubble's domain extends from the ultraviolet, through the visible, and to the near-infrared.

AstroTot Training: Young Museum visitors try on space suits and take over the controls in a mock shuttle cockpit, complete with illuminated buttons, switches, screens, and sounds. Children also create puppet shows, dress in space costumes, play space games, and expand their imaginations by playing in a Moon crater.

MMU Model (Manned Maneuvering Unit): This "rocket backpack" allowed an astronaut to become a self-contained spacecraft, capable of maneuvering hundreds of feet away from the shuttle orbiter. The MMU was developed for NASA by Martin Marietta (now Lockheed Martin) here in Denver. Astronaut Bruce McCandless first flew the MMU from the Space Shuttle in February 1984 on STS-41-B mission.

Space Screen: Enjoy an ever-changing montage of inspiring space images and animations on this giant, high-resolution screen. It showcases images from space-based telescopes and far-flung spacecraft like the Hubble Space Telescope, the Chandra X-ray telescope, robotic orbiters and landers, as well as other cameras and observatories. The Space Screen is one of several areas where visitors congregate to view space events and programs.

THE SHAPE OF SPACE

Life of a Star (Stellar Evolution Computer Interactive): Build your own star and watch its life cycle from birth to death. You may end up with a red dwarf—or a black hole! Compare your star to the Sun and see real images of stars like yours. Find out what a “stellar nursery” is and what nuclear fusion means for stars.

Big Dipper Facilitated Exhibit: How different do constellations look depending on your viewpoint? Join Museum Galaxy Guides as they help you discover how our familiar Big Dipper appears from different perspectives

Orbits Table Facilitated Exhibit: Create your own solar system, or figure out how the space station orbits Earth. Fly to the edges of our galaxy and the observable universe. Place models of the Sun, planets, moons, satellites, comets, and asteroids on a series of moving concentric rings. In the process, you'll learn about Kepler's laws—the physics that govern orbiting objects.

Look Up! The Sky's the limit (Art Hoag “Event Horizon” Rocket): Project Event Horizon is the brainchild of Coloradan Art Hoag. Along with team members, Art designed, built, and launched this 21-foot rocket when he was only 16 years old. Its first launch, in northern Colorado's Pawnee National Grassland in May 2006, reached 10,161 feet above the ground.

Planet Photos: Need some contemplative time? These photos—complete with seating bench—highlight the imaging of distant objects that is possible with modern technology.

A Piece of the Moon (Moon Rock display): Marvel at a fragment of a rock collected on the surface of the moon in December 1972 by the Apollo 17 astronauts. Scott Carpenter donated this lunar sample to the Museum.

Scott Carpenter: Colorado's First Astronaut: Colorado native and graduate of the University of Colorado at Boulder, Scott Carpenter was the second American to orbit Earth. He was on NASA's original astronaut team—known as the Mercury Seven for their participation in Project Mercury.

PLANETARIUM LOBBY

Spiders in Space: The Museum's curator of arachnology, Paula Cushing, participated in an experiment in which spiders were flown to the space station

ROVING FACILITATED EXPERIENCES (Exploration Stations)

Living in Space Exploration Station: What does it really take to live in space? See and touch many of the things that make it possible at this hands-on, touchable station.

LAMP Exploration Station: In this interactive experience, discover how the LAMP mission is looking for water and ice hidden on—and beneath—the surface of our Moon.

Seasons Table Exploration Station: What DOES cause our four seasons? This one-of-a-kind interactive experience lets you discover for yourself how the Earth's tilt and orbit relative to the Sun create our seasonal norms.

Moon Phases Exploration Station: Curious about what causes us to see the Moon differently over the course of a month? Climb inside this interactive “table” and see for yourself what makes the Moon look different over time.

Sundial Exploration Station: Find out why architects design houses and choose building site based on Sun exposure, and experiment with solar radiation over the course of a year.

GPS Exploration Station and Rolling Exhibit: Learn how the Global Positioning System, a mainstay of our smartphones, actually works using systems of satellites and mathematical triangulation. And in the adjacent exhibit, see the many uses of GPS in practice today.

PROGRAMS:

CANDOR CHASMA DIORAMA

Astronaut On the Surface (AOS): Space-suited performers bring the Candor Chasma diorama to life each day. Engage in lively dialog as “astronauts” carry out research on the surface of Mars.

SPACE SCREEN

Storytelling and Other Programs: Experience space lore from different cultures at the Space Screen. Get the Cat-in-the-Hat’s interpretation of space. Count the stars. Explore the International Space Station. Engaging media, props and fantastic storytellers bring space-related storybooks and programs alive.

GALAXY STAGE

Art Station: Titan: Learn about Saturn’s moon Titan and its fascinating climate and landscapes by trying your hand at scientific illustration.

EarthSmart Training: Pretend you’re an astronaut cadet and get a mission briefing. You’ll learn how astronauts recognize Earth’s weather patterns, geologic features, fires and volcanic eruptions from space.

Space Today & Earth Today and Tomorrow: Hear highlights of current events in space during this simulated TV newscast. At times, newscasters will come right into the audience to gather opinions. Stories are brought to life with stunning imagery.

Mission: Superchill: Learn what it would take to visit a place like Neptune’s moon, Triton, and see experiments using liquid nitrogen onstage to simulate the burning cold temperatures on a moon at the very outer reaches of our solar system.

DMNS Weather Central: How do tornados form? What’s it like to see a lightning bolt up close and personal? Witness these experiments as part of a live, studio audience and experience the volatility, danger, and complexity that make up a typical Rocky Mountain thunderstorm.

Gravity Demo: See firsthand why it is that Einstein’s theory of gravity is described as a “gravity well,” and learn how it compares to Newton’s fundamental theory of gravity. Brings theory to life!

Zero G Training: Learn how astronauts train for microgravity. Then, participate in a demonstration with a mock space shuttle and tiny camera to find out why astronauts and other objects appear weightless in space.

EXHIBIT FLOOR

Galileo and the Leaning Tower of Pizza: Experience a light-hearted interpretation of Galileo’s famous experiment showing how bodies of different masses fall at the same rate—with a surprise twist at the end.

What’s Up: A volunteer or staff Museum Galaxy Guide calls your attention to things suspended from the ceiling above you: Event Horizon rocket, Explorer One Spacecraft model, Manned Maneuvering Unit, Sputnik model, Delta IV rocket, and the stars of the Big Dipper.

PLANETARIUM STAGE

Trust Your Instruments, Not Your Senses (Barany Chair) Facilitated Experience: Try out the Barany Chair, used in aerospace flight training. It proves to pilots and astronauts that their inner ear can fool them into thinking they are moving one way when, in fact, they're moving in another. Flight instruments function differently from the inner ear and always provide accurate information.

SKY TERRACE

Solar Viewing Telescopes Facilitated Experience: Head up to the Sky Terrace on nice days, where Museum Galaxy Guides will have solar telescopes ready for you to safely view our nearest and dearest star.