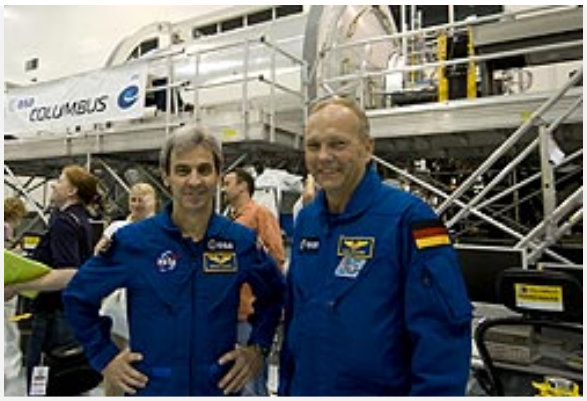
News Archive 2007

Shuttle Mission STS-122 with the Columbus European Laboratory in overview

26 November 2007

The launch of space shuttle Atlantis has been officially cancelled, since one of four engine cutoff sensors gave false readings. The new launch date for mission STS-122 is currently targeted for 7 February 2008.



Léopold Eyeharts and Hans Schlegel

On 6 December 2007 the European Space Laboratory "Columbus" will be launched to the International Space Station (ISS). Columbus, with its planned operational lifetime of ten years, is Europe's first laboratory for long-term research in space conditions. Scientific experiments will be performed onboard in the weightlessness of orbit.

With the German astronaut Hans Schlegel and his French colleague Léopold Eyharts, the crew members of the Columbus mission will install and get the laboratory ready. Together with five NASA astronauts, the pair will be launched on the Space Shuttle Atlantis as part of mission STS-122 from the Kennedy Space Center in Florida.

Columbus consists of different sections. The European laboratory will be assembled during the twelve-day STS-122 flight in three separate Extravehicular Activities (EVAs, "spacewalks").

On the fourth day of the flight, Columbus will be hauled out of its bay and installed during the first mission EVA by German ESA astronaut Hans Schlegel together with his American colleague Rex Walheim

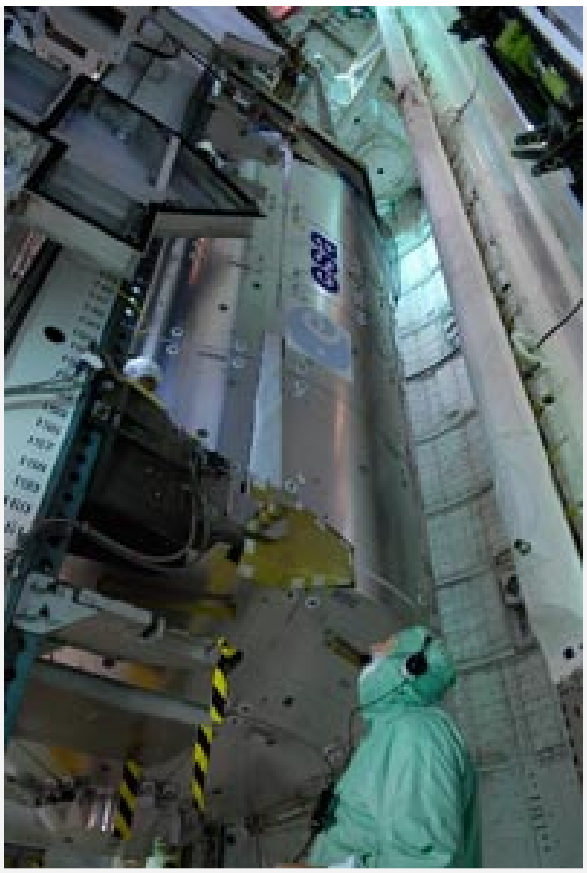
During the second EVA, Schlegel and Walheim will replace a nitrogen tank assembly on the P1 truss section. The old nitrogen tank assembly will be stowed in the shuttle’s cargo bay and returned to Earth.

During the third EVA, performed by other crew members, two external payloads will be added: The **European Technology Exposure Facility (EuTEF)** carrying experiments requiring exposure to the space environment and **SOLAR** - a platform with three scientific instruments to study solar-related phenomena. The attachment of other external parts of the Columbus laboratory will then take place. During the third spacewalk further structural and maintenance work will also be done.

During his time onboard the ISS, Schlegel will also perform scientific experiments. Meanwhile, Léopold Eyharts will be a member of the mission for three months. Apart from his tasks as a second flight

engineer he will continue the commissioning of the European space laboratory, further scientific experiments, as well as research and educational activities.

Highlights of the Columbus laboratory



Columbus in the Atlantis loading bay

The 75 cubic-metre Columbus laboratory is Europe's biggest single contribution to the International Space Station. The 4.5-metre diameter cylindrical module is equipped with flexible reseach facilities that offer extensive science capabilities.

During its 10-year projected lifespan, Earth-based researchers, together with the ISS crew, will be able to conduct thousands of experiments in life sciences, materials science, fluid physics and a whole host of other disciplines, all in the weightlessness of orbit.

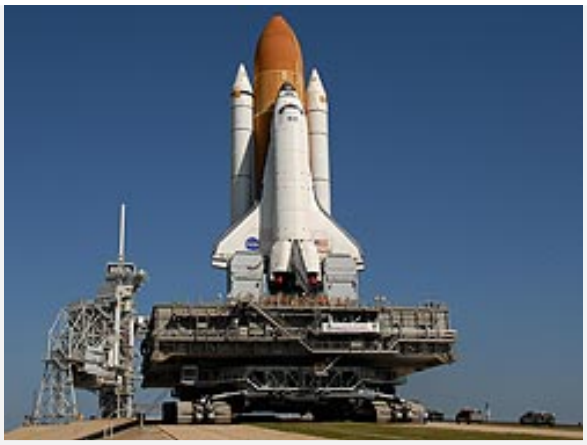
The Columbus laboratory has room for ten International Standard Payload Racks (ISPRs), eight situated in the sidewalls, and two in the ceiling area.

Each rack is the size of a telephone booth and able to host its own autonomous and independent laboratory, complete with power and cooling systems, and video and data links back to researchers on Earth.

Biolab supports experiments on micro-organisms, cells and tissue cultures, and even small plants and small insects.

The **European Physiology Modules Facility (EPM)** - a set of experiments that will be used to investigate the effects of long-duration spaceflight on the human body. Experiment results will also contibute to an increased understanding of age-related bone loss, balance disorders and other ailments back on Earth.

The **Fluid Science Laboratory (FSL)** will accommodate experiments in the strange behaviour of weightless liquids. These too, could bring far-reaching benefits on Earth: better ways to clean up oil spills, for example, and even improved manufacture of optical lenses.



Space Shuttle on its journey to Launchpad 39A

The **European Drawer Rack (EDR)** is a modular and flexible experiment carrier system for a large variety of scientific disciplines, providing basic accommodation and resources for experiment modules housed within standardised drawers and lockers.

The **European Transport Carrier (ETC)** - accommodates items for transport and stowage. In orbit ETC will serve as a workbench and stowage facility.

Columbus in orbit is only the most obvious and impressive part of the whole research programme.

Columbus on the ground will involve researchers all over Europe, who will be able to control their own experiments directly from several User Centres or even directly from their workplaces. Their efforts will be channelled through the Columbus Control Centre in Oberpfaffenhofen, near Munich.

Like the Genoese navigator for whom it was named, Columbus is set for a long journey of exploration. But thanks to broadband telecommunications, hundreds - perhaps thousands - of explorers will be able to work aboard during its 10-year mission.

Facts and figures about Shuttle-Mission Columbus

Mission name:	**Columbus**
Shuttle Mission:	STS-122
ISS Assembly Flight:	1E
Primary Payload:	Columbus
Secondary Payload:	EuTEF, SOLAR, Nitrogen Tank Assembly
Transporter:	Shuttle Orbiter Atlantis
Shuttle Crew	
Shuttle Commander:	Stephen Frick, NASA
Shuttle Pilot:	Alan Poindexter, NASA
Mission Specialist:	Hans Schlegel, ESA
Mission Specialist:	Rex Walheim, NASA
Mission Specialist:	Stanley Love, NASA
Mission Specialist:	Leland Melvin, NASA
ISS Flight Engineer (arriving):	Léopold Eyharts, ESA
ISS Flight Engineer (departing):	Dan Tani, NASA
Launch and return	
Launch site:	Launch Pad 39A, Kennedy Space Center, Florida, USA
Primary landing site:	Kennedy Space Center, Florida, USA
Back-up landing site:	Edwards Air Force Base, California, USA & White Sands Space Harbor, New Mexico, USA
Planned launch date:	6 December 2007

Launch window:	10 minutes
Orbital height:	226 kilometers
ISS orbital height:	ca. 400 kilometres
Inclination:	51.6 degrees
Mission duration:	11 days

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