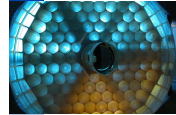


Partners

 Institute of Flight Mechanics and Flight Control	 Steinbeis-Transferzentrum Raumfahrt	 Lehrstuhl für Schule und Medien Berlin-Brandenburg
 Institute of Aircraft Design	 City of Stuttgart	 National Aeronautics and Space Administration
 Institute of Aerodynamics and Gasdynamics	 State of Baden-Württemberg	 Universities Space Research Association
 Institute of Airborne Systems	 Kayser-Threde	 Institute of Statics and Dynamics of Aerospace Structures
 Institute of Propulsion Systems	 MT Mechatronics	
 Planetarium Stuttgart	 Stuttgart Airport	
The german instrument teams		
 Max Planck Institute for Radio Astronomy	 Max Planck Institute for Solar System Research	 DLR Institute of Planetary Research
 University of Cologne	 Universität Stuttgart Germany	GREAT (German Receiver for Astronomy at Terahertz Frequencies)
	 Max Planck Institute for Extraterrestrial Physics	FIFLS (Far-Infrared Field-Imaging Line Spectrometer)



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SOFIA, the »Stratospheric Observatory for Infrared Astronomy« is a joint project of the Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR; German Aerospace Centre) and the National Aeronautics and Space Administration (NASA). It is funded on behalf of DLR by the Federal Ministry of Economics and Technology based on legislation by the German Parliament, the state of Baden-Württemberg and the Universität Stuttgart. Scientific operation for Germany is coordinated by the German SOFIA-Institute (DSI) of the Universität Stuttgart, for the USA by the Universities Space Research Association (USRA). The development of the German instruments is financed through the Max Planck Society (MPG) and the German Research Foundation (DFG).

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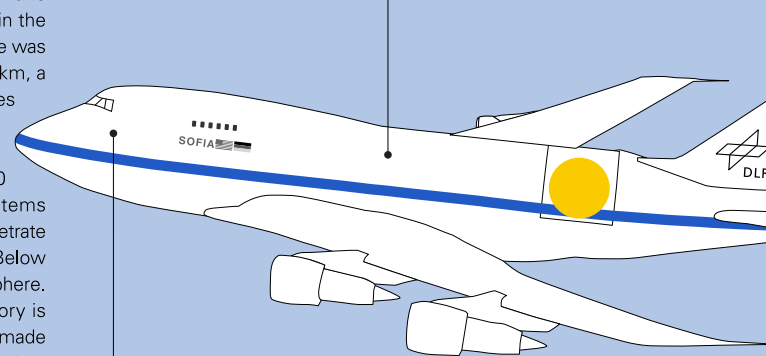
SOFIA –
Stratospheric
Observatory
For
Infrared
Astronomy



An observatory takes off

SOFIA – the Stratospheric Observatory For Infrared Astronomy is a project jointly developed and operated by the German Aerospace Center (DLR) and the National Aeronautics and Space Administration (NASA). For this purpose a Boeing 747 SP was heavily modified and in the back portion of the plane a 17-ton, 2.7-meter telescope was installed. A cruising altitude of approximately 14 km, a velocity of approximately 900 km/h, and temperatures of approximately $-50\text{ }^{\circ}\text{C}$ provide harsh conditions for astronomical observations. Still astronomers plan to take off several times per week during the next 20 years and observe young stars and planetary systems through the open hatch. Infrared radiation can only penetrate the thinner atmosphere down to the stratosphere. Below it is swallowed mostly by water vapour in our atmosphere. The essential German contribution to the observatory is the telescope. Its hydrostatic bearing and the mirror made of »Zerodur« are masterpieces of German engineering.

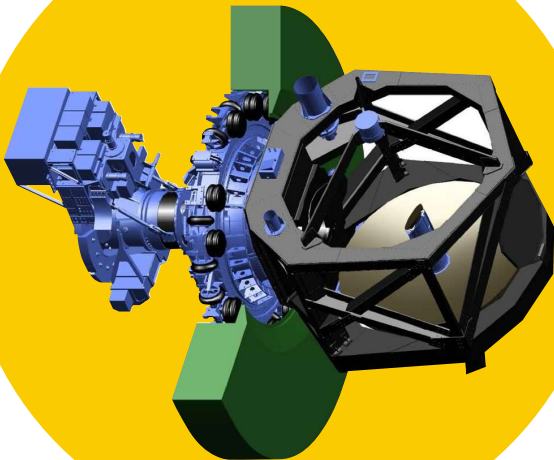
Telescope operators and scientists find their place in the middle section of the Boeing, where most modern computer workstations allow research work at the highest level.



The field of education and public relations in the first section of the plane will allow teacher and student groups to participate in observation flights.

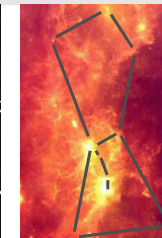
The flying faculty room

When SOFIA begins its scientific operations in 2010, this unique observatory will also provide a platform for educational and public outreach. We aim at increasing the interest in scientific and technological topics especially among students, but also among teachers, journalists, and interested laypeople. For example, selected pupil and teacher groups will have the opportunity to accompany SOFIA's scientific projects. Later on, the highlight here might be flying along on an observation mission. In addition, via satellite transmissions from the flying observatory, numerous German school classes will have the opportunity to experience live how the astronomers on board SOFIA prepare and carry out their measurements. In the initial phase this unique educational program will be developed with nine partner schools in Baden-Württemberg and Brandenburg. At a later point, schools from all of Germany will be able to participate.



Infrared astronomy

The light that humans can see with the bare eye reveals only a fraction of our universe. A picture of the constellation Orion in the visible light area (left) differs greatly from the infrared photograph of the same area (right). The infrared light reveals gigantic clouds of warm, dense gas and dust in which new stars are formed. Visible light cannot penetrate these clouds – infrared light, however, certainly can.



The characteristic constellation of Orion shown in two views: photography obtained in the visible light (left) and in the infrared light (right).

This means that with the help of the infrared observatory SOFIA, researchers will be able to witness the birth of new stars. But also the secrets of distant galaxies will – at least partly – be disclosed to the scientists. The light emitted from these galaxies is stretched so much by the escaping velocity of the galaxies themselves that the colors are shifted into the infrared spectrum.