SPACE RESEARCH

15-6-2020

LIVING IN SPACE

TICEKT TO SPACE

Living in space is not the same as living on Earth. In space, astronauts' bodies change. On Earth, our lower body and legs carry our weight. This helps keep our bones and muscles strong. In space, astronauts float. They do not use their legs much. Their lower backs begin to lose strength. Their leg muscles do too. The bones

begin to get weak and thin. This is very bad for astronauts' bodies. So, how do astronauts help their muscles and bones? They must exercise in space every day.

Mission Objectives:The Demo-2 mission is the final major test before NASA’s Commercial Crew Program certifies Crew Dragon for operational, long-duration missions to the space station.For operational missions, Crew Dragon will be able to launch as many as four crew members at a time and carry more than 220 pounds of cargo, allowing for an increased number crew members aboard the space station and increasing the time dedicated to research in the unique microgravity environment, as well as returning more science back to Earth.

Demo-2 Astronauts: 1. Behnken is the joint operations commander for the mission, responsible for activities such as rendezvous, docking and undocking, as well as Demo-2 activities while the spacecraft is docked to the space station. He was selected as a NASA astronaut in 2000 and has completed two space shuttle flights. Behnken flew STS-123 in March 2008 and STS-130 in February 2010, performing three spacewalks during each mission.Hurley is the spacecraft commander for Demo-2, responsible for activities such as launch, landing and recovery. He was selected as an astronaut in 2000 and has completed two spaceflights. 2. Hurley served as pilot and lead robotics operator for both STS-127 in July 2009 and STS-135, the final space shuttle mission, in July 2011.

JOURNEY TO MARS

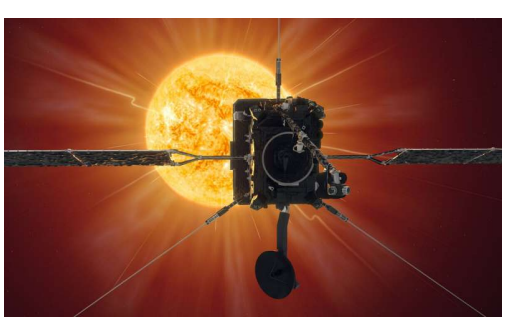
The planet Mars has been explored remotely by spacecraft. Probes sent from Earth, beginning in the late 20th century, have yielded a large increase in knowledge about the Martian system, focused primarily on understanding its geology and habitability potential.Engineering interplanetary journeys is complicated and the exploration of Mars has experienced a high failure rate, especially the early attempts. Roughly sixty percent of all spacecraft destined for Mars failed before completing their missions and some failed before their observations could begin. Some missions have met with unexpected success, such as the twin Mars Exploration Rovers, which operated for years beyond their specification.

Current Status: On June 10, 2018, Opportunity rover fell silent, leaving Curiosity of the Mars Science Laboratory mission with six orbiters surveying the planet: Mars Odyssey, Mars Express, Mars Reconnaissance Orbiter, Mars Orbiter Mission, MAVEN, and the Trace Gas Orbiter, which have contributed massive amounts of information about Mars. The stationary lander InSight is investigating the deep interior of Mars. No sample return missions have been attempted for Mars and an attempted return mission for Mars' moon Phobos (Fobos-Grunt) failed at launch in 2011.Five more missions are in the late stages of

development and fabrication, and will be launched between 2020 and 2021. These include the ExoMars Rosalind Franklin rover and landing platform Kazachok by Roscosmos and ESA, NASA's Mars 2020, the 2020 Chinese Mars Mission, the Hope Mars Mission by the United Arab Emirates, and India's Mars Orbiter Mission 2.

THE MARTIAN SYSTEM: Mars has long been the subject of human interest. Early telescopic observations revealed color changes on the surface that were attributed to seasonal vegetation and apparent linear features were ascribed to intelligent design. Further telescopic observations found two moons, Phobos and Deimos, polar ice caps and the feature now known as Olympus Mons, the Solar System's second tallest mountain. The discoveries piqued further interest in the study and exploration of the red planet. Mars is a rocky planet, like Earth, that formed around the same time, yet with only half the diameter of Earth, and a far thinner atmosphere; it has a cold and desert-like surface.One way the surface of Mars has been categorized, is by thirty "quadrangles", with each quadrangle named for a prominent physiographic feature within that quadrangle.

HOW CLOSE CAN WE GO NEAR TO THE SUN?



We cannot as such go much close to sun as temperature is very high near sun and if go

near with present technology, we will get melt down into lava and fall directly into the Sun. So, scientists designed solar orbiter for physics of the Sun. The Solar Orbiter spacecraft is a Sun-pointed, three-axis stabilised platform with a dedicated heat shield to provide protection from the high levels of solar flux near perihelion. The spacecraft provides a stable platform to accommodate the combination of remote-sensing and in situ instrumentation in an electromagnetically clean environment. The 21 sensors were configured on the spacecraft to allow each to conduct its in situ or remote-sensing experiments with both access to and protection from the solar environment. Solar Orbiter has inherited technology from previous missions, such as the solar arrays from the BepiColombo Mercury Planetary Orbiter (MPO). The solar arrays can be rotated about their longitudinal axis to avoid overheating when close to the Sun.

The objective of the mission is to perform close-up, high-resolution studies of the Sun and its inner heliosphere. The new understanding will help answer these questions: How and where do the solar wind plasma and magnetic field originate in the corona? How do solar transients drive heliospheric variability? How do solar eruptions produce energetic particle radiation that fills the heliosphere? How does the solar dynamo work and drive connections between the Sun and the heliosphere?

ESA's sun-exploring mission Solar Orbiter has made its first close approach to the star on June 15, getting as close as 77 million kilometers to its surface, about half the distance between the sun and Earth.In the week following this first perihelion, the point in the orbit closest to the sun, the mission scientists will test the spacecraft's ten science instruments, including the six telescopes on-board, which will acquire close-up images of the sun in unison for the first time. According to ESA's Solar Orbiter Project Scientist Daniel Müller, the images, to be released in mid-July, will be the closest images of the sun ever captured."We have never taken pictures of the sun from a closer distance than this," Daniel says. "There have been higher resolution close-ups, e.g. taken by the four-meter Daniel K. Inouye Solar Telescope in Hawaii earlier this year. But from Earth, with the atmosphere between the telescope and the sun, you can only see a small part of the solar spectrum that you can see from space.

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