The University of Iowa is currently responsible for (1) instruments on 17 operating spacecraft, two of which are the most distant man-made objects from Earth; (2) developing instruments for future space exploration and rocket missions; and (3) conducting data analysis studies using information collected by past and present U. of Iowa instruments and instruments designed at other institutions.

CASSINI
The Cassini mission to Saturn, launched in 1997, studies the planet, its magnetosphere, rings, and the Saturnian moons. Scientists across the globe collaborate on this mission using observations and measurements from each of the spacecraft's 12 instruments, including the Radio and Plasma Wave Science instrument developed at the U. of Iowa.

Some Cassini discoveries to date: (a) Titan's nitrogen atmosphere occasionally has hydrocarbon rain that forms liquid ethane lakes; (b) Enceladus has water and ice geysers; (c) water and ice fill Saturn’s magnetosphere and form the E-ring; (d) ringslets make up the ring system and eddies in the rings are caused by gravitational interactions with Saturn's moons and electromagnetic interactions with Saturn's magnetosphere; and (e) a giant thunderstorm has been observed in Saturn's northern hemisphere. During the next year, Cassini scientists hope to learn answers to questions that have developed during the earlier years of the mission, such as what is the length of a Saturn day and how a probable subsurface ocean feeds Enceladus’ geysers. Scientists also plan to continue Cassini’s mission until Saturn's northern summer solstice, culminating in a total of 295 orbits around the planet, 127 flybys of the moon Titan, and 45 flybys of Saturn's icy moons with 23 of those flybys close to the moon Enceladus. NASA will end the mission in 2017 by plunging the Cassini spacecraft into the atmosphere of Saturn.

MARS EXPRESS
The Mars Express spacecraft, launched in 2003 and now orbiting Mars, carries 7 instruments including a subsurface sounder radar and altimeter instrument developed at the University of Iowa. The Iowa instrument searches for subsurface water at Mars and studies the ionosphere of the planet. In 2014, the Iowa instrument collected data used to study the ionospheric impacts of the comet Siding Spring’s close flyby of Mars and began collaborative studies with the Maven spacecraft. Images: Left image below shows extended antennas provided by the U. of Iowa; center & right images were taken by the camera on Mars Express and show craters and other evidence of water or liquid flows on Mars.