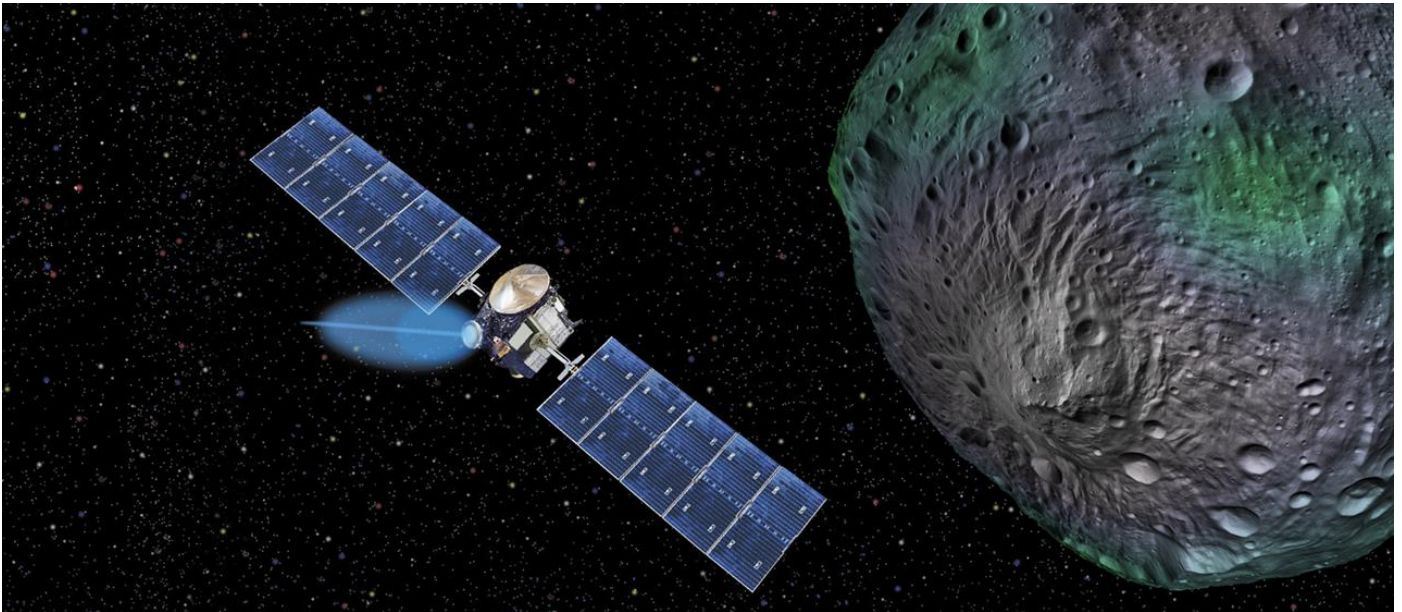


Journey to the beginning of the solar system: Dawn's exploration of the main asteroid belt

Friday, April 23, 15:00-16:00 HST

Zoom link: <https://hawaii.zoom.us/j/93358887540>



NASA/JPL-Caltech/UCLA/MPS/DLR/IDA

SUMMARY

This talk will highlight results from the NASA Dawn mission, which completed its 11-year voyage through the main asteroid belt in 2018. Dawn transformed Vesta and Ceres from fuzzy patches of light as viewed by Earth-based telescopes into complex, geologic worlds. Vesta and Ceres are largely intact protoplanets, "dry" and "wet" end members representative of the building blocks of the terrestrial planets. As such, the data provide new insights into processes that occurred during the solar system's earliest epoch. The Dawn spacecraft used solar electric propulsion to travel to and successively orbit two planetary bodies (a first). The payload consisted of dual Framing Cameras, a Visible and Infrared Mapping Spectrometer, and a Gamma Ray and Neutron Detector. The instruments globally mapped the surface topography, mineralogy, and elemental composition of Vesta and Ceres. In addition, Dawn's radio science investigation mapped their gravity fields, providing constraints on interior structure. An overview of the spacecraft and payload is presented, along with a discussion of development and flight operations. With mission success, Dawn joins the pantheon of robotic space explorers, which over the past 60 years have opened new vistas in planetary science, revolutionizing our understanding of solar system formation and evolution. Technologies and operational concepts proven by Dawn are being applied to future missions.

Speaker: **Tom Prettyman, Planetary Science Institute**



Tom Prettyman a Senior Scientist at the Planetary Science Institute, has worked on several NASA missions, including Lunar Prospector, 2001 Mars Odyssey, and Dawn. He was the Principal Investigator for the Gamma Ray and Neutron Detector investigation on Dawn, which explored the two most massive bodies in the main asteroid belt, 4 Vesta and 1 Ceres. He is a co-Investigator of the Psyche mission to the main belt asteroid 16 Psyche and the LunaH-Map CubeSat mission to the Moon. His primary area of expertise is planetary remote sensing using nuclear spectroscopy.

Aerospace Engineering Program in University of Hawaii at Manoa

The Aerospace Engineering Program (AEP) aims to address technological and educational concerns and challenges in aeronautics and space exploration, thereby contributing to the integration of Aerospace Engineering research and education in Hawaii. It supports the recently established Aerospace Engineering Concentration of the COE. This Seminar Series is one of the AEP's efforts dedicated to disseminating and promoting research and knowledge in a wide range of areas of Aerospace Engineering (<http://manoa.hawaii.edu/aeroeng/>)