Computing for Aiming a Spaceborne Bistatic-Radar Transmitter

BISTAT is a computer program for use in aiming a spaceborne bistatic-radar transmitting antenna at a remote planet that has an atmosphere, such that after refraction by the atmosphere and reflection from the surface of the planet, the radar signal travels toward a receiver on Earth. BISTAT includes an algorithm that neglects atmospheric refraction and calculates a specular-reflection point for a spacecraft at a given location. The specular-reflection point is then used as an initial guess for a modified limb-track algorithm that takes atmospheric refraction into account. The output of BISTAT for all spacecraft positions of interest constitutes a pointing profile; the output data are in the form of an inertial-vector file and a Doppler-residual file. The inertial-vector file is used to command the attitude of the spacecraft; the Doppler-residual file is used to determine a downlink frequency file for the receiver.

This program was written by Nicole Rappaport of Caltech for **NASA's Jet Propulsion Laboratory**. *Further information is contained in a TSP (see page 1).*

This software is available for commercial licensing. Please contact Karina Edmonds of the California Institute of Technology at (626) 395-2322. Refer to NPO-41518.