

# Testing for **Dark Matter Trapped** in the Solar System

by

**Dr. Timothy P. Krisher**  
Jet Propulsion Laboratory  
California Institute of Technology  
Pasadena, California

## ABSTRACT

We consider the possibility of dark matter trapped in the solar system in bound solar orbits. If there exist mechanisms for dissipating excess kinetic energy by an amount sufficient for generating bound solar orbits, then trapping of galactic dark matter might have taken place during formation of the solar system, or could be an ongoing process. Possible locations for accumulation of trapped dark matter are orbital resonances with the planets or stable regions in the outer solar system. It is possible to test for the presence of unseen matter by measuring its gravitational effects. Current results for dynamical limits obtained from an analysis of planetary ephemeris data and spacecraft tracking data are presented. Possible future improvements are discussed.