

HIGH DYNAMIC GPS UNAIDED PSEUDORANGE TRACKING DEMONSTRATION



**William J. Hurd and Joseph I. Statman
Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California**

ABSTRACT

A breadboard high dynamic GPS receiver capable of pseudorange tracking with accelerations of 50 g or higher without inertial aiding is presented. The receiver uses cross correlation followed by fast Fourier transformation to approximate maximum likelihood estimation of pseudorange and range rate, with no phase or delay locked loops. The breadboard system consists of a one channel receiver and a high dynamics signal simulator. A planned demonstration of the receiver is described and anticipated results are presented showing pseudorange lag errors of under 10 m with acceleration of 50 g.

Key-words: GPS, GPS Receiver, Global Positioning System Receiver, Pseudorange Tracking, High Dynamic Tracking, Radio Navigation, Position Location.