the ideal position from the profile, and calculates a new voltage command by use of an embedded PID routine — all within each sampling period. The voltage command is sent to the D/A board to control the stage. µPID uses special kernel headers to obtain microsecond timing resolution. Inasmuch as µPID implements a single-threaded process and all other processes are disabled, the Linux operating system acts as a soft real-time system.

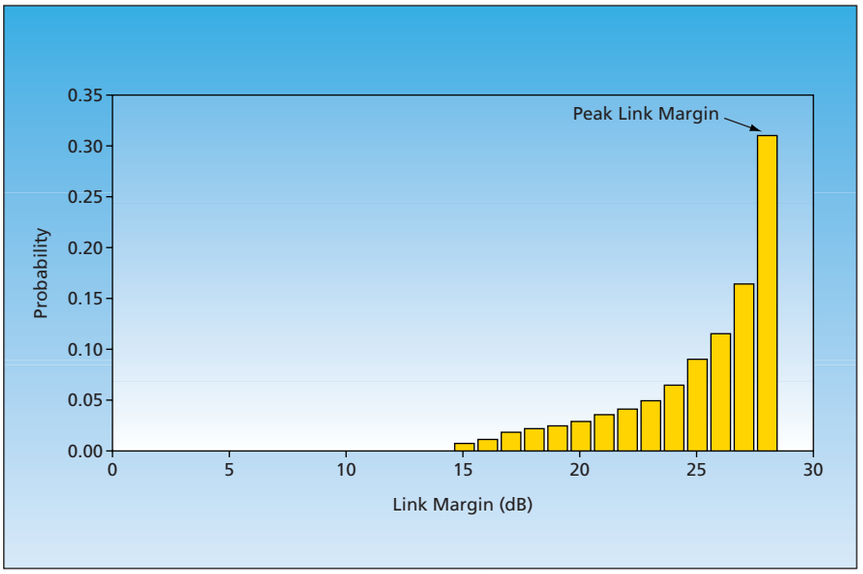
This program was written by Vahag Karayan, Stanley Sander, and Richard Cageao of Caltech for NASA's Jet Propulsion Laboratory. Further information is contained in a TSP (see page 1).

This software is available for commercial licensing. Please contact Karina Edmonds of the California Institute of Technology at (626) 395-2322. Refer to NPO-41107.

Analyzing Radio-Frequency Coverage for the ISS

Lyndon B. Johnson Space Center, Houston, Texas

The Interactive Coverage Analysis Tool (iCAT) is an interactive desktop-computer program serving to (1) support planning of coverage, and management of usage of frequencies, of current and proposed radio communication systems on and near the International Space Station (ISS) and (2) enable definition of requirements for development of future such systems. The iCAT can also be used in design trade studies for other (both outer-space and terrestrial) communication systems.



This is the type of **Statistical Analysis** that can be made from the output of iCAT.

A user can enter the parameters of a communication-system link budget in a table in a worksheet. The nominal (on-axis) link values for the bit-to-noise-energy ratio, received isotropic power (RIP), carrier-to-noise ratio (C/N), power flux density (PFD), and link margin (see figure) of the system are calculated and displayed in the table. Plots of field gradients for the RIP, C/N, PFD, and link margin are constructed in an ISS coordinate system, at a specified link range, for both the forward and return link parameters, and are displayed in worksheets. The forward and reverse link antenna gain patterns are also constructed and displayed. Line-of-sight (LOS) obstructions can be both incorporated into the gradient plots and displayed on separate plots.

This program was written by Steven M. Bolen and Catherine C. Sham of Johnson Space Center. Further information is contained in a TSP (see page 1). MSC-23536