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Poster

GPS multipath can present a significant source of error for precise positioning applications. Using the Colorado Center for Astrodynamics Research (CCAR) Advanced GNSS Multipath Model (AGMM) we simulated expected code and carrier multipath for the COSMIC-2 satellite at the locations of the POD antennas. The simulation utilizes a CAD model of the satellite that includes the POD and RO antennas as well as the solar panel and other components of the satellite structure that could feasibly produce multipath. Static 2π steradian whole-sky simulations from the bore-sight of the POD antennas show expected signal blockages due to the structure as well as regions on the sky which produce higher multipath magnitudes. Time varying simulations utilize the capability of the AGMM software to articulate portions of the CAD model. The time varying simulations were carried out for a full orbit at the 520 km and 750 km altitudes, using a 31 satellite GPS constellation, and simulating solar panel sun tracking rotation. A solar panel trim angle of 30° was assumed to be the worst case scenario since this angle obstructs the field of view of the POD antennas the most. Results from the time varying and whole-sky simulations show only small sky blockages at low elevation angles (relative to the bore-sight of the POD antennas). Simulated multipath magnitudes are small with code multipath typically less than 1 meter, and carrier multipath typically less than 1 cm. At the 30° trim angle, the simulation produces larger multipath magnitudes.

OSTS session

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