1096-65-1094 **Nora Stack*** (nhstack@smcm.edu), Campus Center #2721, 16800 Point Lookout Road, St. Mary's City, MD 20686, **Walter Cai** (wzc2@cornell.edu), 408 Dryden Rd. APT 2, Ithaca, NY 14850, **Ana Cristina Perez-Gea** (gea9109@hotmail.com), Brisa 287, Jardines del Pedregal, Álvaro Obregón 01900, Mexico, and **Scott Manifold** (scott.manifold@email.ucr), 9508 Taft Street, Riverside, CA 92508. *Fast Generation and Tracking of GPS Visibility and Dilution of Precision Regions Using Level Set Methods.*

Two major performance measures of GPS systems are visibility and Dilution of Precision (DOP). Visibility is defined by regions that share a direct line of sight with sufficiently many satellites in orbit, while DOP is a metric correlated with GPS user error. Our hypothesis is that implementing Level Set Methods to measure visibility and DOP will prove to be more time efficient and equally as accurate as the systems that are currently used by analysts at The Aerospace Corporation.

Drawing on current literature and working jointly with The Aerospace Corporation, two separate strategies were investigated and implemented with regards to the problem framework; a Static Approach and a Dynamic Approach. Furthermore, variations to choice of spatial scheme, point set representation, mapping projection, and many other aspects were explored to study effects on computational efficiency and accuracy on performance simulations. From this point, efforts to implement and test the viability of different numerical optimization schemes, in relation to the problem framework and MATLAB software, were pursued. Initial results of these techniques have shown to be promising with regards to analysis and calculation of GPS Satellite Visibility Zones and GPS Dilution of Precision metrics. (Received September 12, 2013)