

Ground Track Prediction Model of the KITSAT-1

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Abstract

An accurate prediction of the satellite ground track is essential to optimize the maneuver design. It requires a prediction model that considers all perturbations that cause significant variations in the satellite ground track. We developed a prediction model that includes the effects of the fifth-order zonal harmonics, atmospheric drag, and luni-solar gravitational perturbations. Luni-solar gravity perturbations have been obtained in another way which is different from the method we used in previous paper(Yi and Choi, 1992). In this case, we construct our own disturbing function including inclination term by the Algebraic Manipulation. Luni-solar perturbations reduce the maneuver magnitude required to offset eastward ground track drift due to drag, the amount dependent on current luni-solar phasing geometry.