

Solid State Telescope on KAISTSAT-4

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The Solid State Telescope (SST) on-board the KAISTSAT-4 investigates plasma processes occurring in the low altitude auroral acceleration region. The auroral particles play the key role in magnetosphere-ionosphere coupling. The particles in the intervening energy range, from just above solar wind plasma to 1MeV, are referred as suprathermal particles. These particles are important in the varied plasma and energetic particle phenomena observed to occur in the auroral oval and upstream from the Earth's magnetosphere. The SST is designed specifically to make measurements of energetic electrons in this energy range with simultaneous measurement of FIMS (Far-Ultraviolet Imaging Spectrograph) on the KAISTSAT-4. SST consists of two types of stacked solid state detectors. One is the pair detector whose direction is perpendicular to geomagnetic field and the other is the triplet detector whose direction is parallel to geomagnetic field. Higher energy electrons (up to $\sim 1\text{MeV}$) are identified by the coincidence logic. The SST provide energy resolution of $\Delta E/E \sim 0.3$ and angular resolution of $22.5^\circ \times 36^\circ$. ETB (Electric Test Bed) version of the SST is under development and detailed system design is discussed in this study.

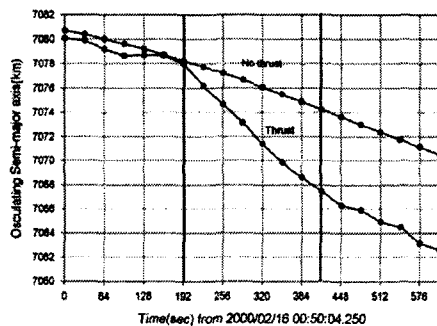


Figure 1. Osculating semi-major axis variation

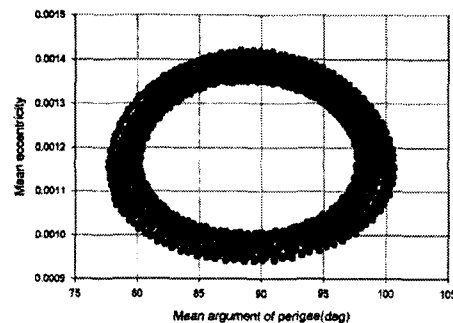


Figure 2. Mean argument of perigee vs. eccentricity