

187. SPACE SITUATIONAL AWARENESS IMPROVEMENTS

PROJECT AT-A-GLANCE

- **AST RDAB POC:** Coleman, Kelvin
- **AST RESEARCH AREA:** 1.1 STM - Integration & Operations
- **PRINCIPAL INVESTIGATOR:** Born, George
- **EXECUTION ENTITY:** CU
- **PERIOD OF PERFORMANCE:** Jan 3, 2011 - Jan 6, 2012
- **STATUS:** Ongoing

PROJECT DESCRIPTION

PURPOSE: Effective space situational awareness faces the challenges of bringing together observations from disparate sensors and sources, developing computationally efficient dynamic propagation schemes, and formulating accurate estimation methods for the purpose of quantifying and qualifying space-based activities.

OBJECTIVES: The desired outcome is to:

- (i) maximize the information extracted from all sources of collected data (minimize ambiguity),
- (ii) gather data in a way that maximizes its information content (maximize efficiency),
- (iii) recover and predict the space domain with more realistic and accurate knowledge, and
- (iv) infer the space-based environment in a timely fashion so as to increase safety and enable effective decision making.

GOALS: The goal of this effort is to improve our knowledge of current and future behavior of space objects by reducing the associated uncertainties. This project will improve, develop, and test software, hardware, and information fusion plans to produce accurate, autonomous, and near real-time understanding of objects in the operational space environment to promote orbital safety and evaluate debris threat mitigation schemes. This will require coordination with various organizations in civil, commercial, and military space sectors.

STATEMENT OF WORK

Examine the uncertainty associated with resident space objects and the time propagation of these uncertainties through coordinated extensive research of:

- Next Generation Space Catalog
- Resident Space Object Characterization
- Collision Avoidance/Conjunction Analysis
- Orbital Safety and Debris Removal.