Technology Service Corporation

Radar Algorithm Development and Simulation for Missile Defense

Technology Service Corporation (TSC) works closely with the Missile Defense Agency (MDA) in creating a Ballistic Missile Defense System (BMDS) to defend the United States, its deployed forces, allies, and friends from a ballistic missile attack. TSC's primary contribution has been in developing advanced innovative physics-based discrimination techniques and radar simulations for improving the BMDS discrimination performance.

MDA Photo

Discrimination, distinguishing lethal objects from non-lethal ones, is the most central and challenging problem of ballistic missile defense. The primary objective of the entire missile defense shield is to neutralize the lethal warhead, but this task is complicated by the presence of a large entourage of other objects; the so-called threat complex. Some of these objects can be expected to have characteristics intended to confuse the BMDS decision authorities. TSC's MDA work is focused on developing methods for producing good discrimination performance even in such stressing threat environments.

During the course of this work, TSC has developed an extensive capability in modeling of ballistic missile threats including the prediction of Radar Cross-Section (RCS) and motion states of re-entry vehicles, clutter objects, and debris. We have created a comprehensive algorithm simulation test bed that includes flexible scenario definition, commercial Computer Aided Design modeling tools, an accurate and efficient orbital motion propagator, and state-of-the-art RCS prediction codes. Using this test bed, we have demonstrated innovative object discrimination, clutter mitigation, and radar data fusion techniques.

WHY TSC?

Since the founding of TSC over 40 years ago by Dr. Peter Swerling, sensor system engineering, signal processing techniques, and weapon systems have been the major efforts that we have pursued in support of our customers. Over the years, TSC has won numerous MDA contracts and has assembled a team of talented engineers dedicated to radar system analysis, radar data analysis, and radar system modeling.

MDA Photos

CONTACT INFORMATION

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