

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Numerical Study of Active Shielding of a Spacecraft against Cosmic Rays ADRIAN SUN, Northrop Grumman Space Technology, One Space Park, Redondo Beach, CA 90278, OLEG BATISHCHEV, MIT, Cambridge, MA 02139 — High-energy Cosmic Rays composed of predominantly 1-2GeV protons and alpha-particles pose a major hazard for subjects, biological materials and sensitive equipment in the Earth's orbit and on the inter-planetary missions. This factor has to be addressed continuously. We study numerically magnetic, electrostatic and hybrid shielding schemes by using computational framework, which embraces relativistic transport of particles, self-consistent electromagnetic fields and ambient plasma response. Numerical approach uses unstructured adaptive grid capturing important details of shield geometry in 3D. Results of the preliminary simulations of a spacecraft shielding against high-energy particles will be reported.

Oleg Batishchev
MIT

Date submitted: 25 Jul 2006

Electronic form version 1.4