Spectroscopic Dosimeter

Merril Corporation of Utah, dba MSI Photogenics

Technical Abstract

Analysis of Phase I test data demonstrates that the Photogenics Spectroscopic Dosimeter will detect neutron energies from 0.8 up to 600 MeV. The detector efficiencies in the energy region of interest to NASA of 0.5 to 150 MeV were predicted by MCNP-X models. These models were partially confirmed by the tests at the EAL and LANSCE, with a high confidence in the data for the 1-14 MeV range and a confirmation of the detector's spectroscopic capabilities between 15-150 MeV. Further analysis of the high energy data will be performed in Phase II. Using the detection efficiencies determined Phase I and the IRCP74 damage coefficients, doses have been calculated for the neutron fluxes encountered in the test facilities. During Phase II a full-scale working model of the spectroscopic dosimeter will be fabricated and tested.

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2007 Phase II
Proposal X14.03-8416

Enhancing NASA's Procedure Representation Language to Support Planning Operations

TRACLabs, Inc.

Technical Abstract

Automation and autonomy are key elements in realizing the vision for space exploration. The NASA Exploration Technology Development Program (ETDP) has been developing several core autonomy capabilities, one of which is called a procedure representation language (PRL). PRL can be automatically translated into code that can be executed by NASA-developed autonomous executives. Another type of automation being developed by ETDP is automated planning aids. These will be needed to increase the number of missions that existing levels of flight personnel must be able to handle. But PRL has few constructs to enable automated planners and schedulers to take advantage of the procedures resulting from PRL. In Phase 1 we developed extensions to PRL to add planning information resource, constraints and sub-procedural information so as to produce code useable by automated planning software. In this project, we propose to develop an interactive planning aid for flight controllers to show that such an aid can process our enhanced PRL files to generate mission plans and to test their feasibility via an execution system. Besides refining our previous modeling efforts, this work will show that the availability of computer-useable planning information can lead to practical applications of NASA's automated planning efforts.

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2007 Phase II
Proposal X1.01-9152