The Radioisotope Power System Dose Estimation Tool (RPS-DET) 2019 Development Update

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Abstract. The Radioisotope Power System Dose Estimation Tool (RPS-DET) is a radiation simulation tool being developed at Oak Ridge National Laboratory for the National Aeronautics and Space Administration’s RPS Program. The purpose of RPS-DET is to provide RPS users, designers, researchers, engineers and scientists not skilled-in-the-art of Monte-Carlo particle transport, a tool that simplifies the development, simulation, and analysis of the radiation implications from numerous RPS designs and mission architectures that are based on the Step-2 general purpose heat Source (GPHS) using plutonium oxide fuels.

Originally, RPS-DET began exclusively as an internally-used analysis tool but interest from potential users prompted an initiative to subject it to a software quality assurance (SQA) plan, and validation and verification (V&V), in preparation for release and use by outside researchers. During the SQA and V&V process, the opportunity to implement various improvements, software simplifications, and user-needs was identified, and these changes are currently underway. Topics discussed during the lightning talk will be software implementation, user-interfaces, analysis capabilities, product description/demonstration, and general 2018/2019 project updates.

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