

NASA CARA Tools

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The NASA Conjunction Assessment Risk Analysis (CARA) team has created and posted to GitHub a set of MATLAB software tools for collision assessment (CA) analysis. The software is provided to the public under a NASA Open-Source Software Agreement and is maintained/updated by the CARA Analysis team. Capabilities provided within the toolset include algorithms in assessing probability of collision (P_c), collision consequence, covariance realism, Orbit Determination (OD) quality assessment, and single covariance max P_c . Additionally, a set of utilities are provided for astrodynamics topics closely related to CA, such as: Conjunction Data Message (CDM) parsing, covariance transformations, coordinate system transformations, etc. The repository is regularly updated on a monthly basis and new functionality will be added as algorithms are approved for public release.

This presentation will provide a brief introduction to the toolset, highlight some of the key components which can be used in operations, and will present information on algorithms that are in the release pipeline and can be expected soon. This software will enable operators to independently perform CA calculations using the same core algorithms that CARA uses in operations.

References:

NASA CARA Analysis Tools GitHub: https://github.com/nasa/CARA_Analysis_Tools