

Algorithms for the Computation of Debris Risks

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Determining the risks from space debris involve a number of statistical calculations. These calculations inevitably involve assumptions about geometry - including the physical geometry of orbits and the geometry of non-spherical satellites. A number of tools have been developed in NASA's Orbital Debris Program Office to handle these calculations; many of which have never been published before. These include algorithms that are used in NASA's Orbital Debris Engineering Model ORDEM 3.0, as well as other tools useful for computing orbital collision rates and ground casualty risks. This paper will present an introduction to these algorithms and the assumptions upon which they are based.