COSMOSTATS 2023 - Bridging the Gap: Statistical Modeling of Cosmology Extremes



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A Statistical Formulation of Conjunction Assessment

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Satellite conjunctions involving "near misses" of space objects are becoming increasingly likely. One approach to risk analysis for them involves the computation of the collision probability, but this has been regarded as having some counterintuitive properties and its interpretation has been debated. We propose a new approach based on a simple statistical model and discusses inference on the miss distance between the two objects, both when the relative velocity can be taken as known and when its uncertainty must be taken into account. The ideas are illustrated with case studies and Monte Carlo results that show its excellent performance. More details of this work can be also found in [1].

Joint work with Anthony C. Davison (Swiss Federal Institute of Technology). [1] Elkantassi, S.; Davison, A. C. Journal of Guidance, Control, and Dynamics 2022, 45, 2258–2274.

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