



The Math Colloquium
Department of Mathematics
San José State University



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Geometric Methods for Tracking Space Debris

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Abstract: The main difficulty in the orbit determination problem for space debris is in correlating different data corresponding to the same physical object. The problem is that a sequence of optical measurements of an orbiting object has enough information to determine its left-right and up-down position from the viewpoint of the observer, but not its distance from the observer.

In this talk, we present a new approach to the space situational awareness problem, based on a natural metric in the space of Keplerian orbits of fixed energy. This metric allows us to compute the “shortest distance” between the data of two sequences of optical measurements, and therefore, to determine if they correspond to the same object.

Background: Students should have taken Calculus I–III and be comfortable with thinking about things in two or more dimensions.

About the speaker: Dr. Maruskin is an Assistant Professor at SJSU and has interests in dynamics, astrodynamics, and the geometric theory of nonholonomic mechanics. He completed his Ph.D. in Applied and Interdisciplinary Mathematics at the University of Michigan in 2008.

SNACKS IN MH331B AT 2:30 PM

TALK STARTS AT 3 PM

For more information, see our full schedule at:

<http://www.math.sjsu.edu/~hsu/colloq/>