BI-CO MATHEMATICS COLLOQUIUM

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"Euler Calculus and Sensor Networks"

Monday, October 20, 2008

Talk at 4:15 p.m. – KINSC H109
Tea at 4:00 p.m. – KINSC H208, Math Lounge

ABSTRACT: This work is motivated by a fundamental problem in sensor networks—the need to aggregate redundant sensor data across a network. We focus on a simple problem of enumerating targets with a network of sensors that can detect nearby targets, but cannot identify or localize them.

We solve this problem with calculus—but not the calculus of Netwon et al. An integration theory built from topology and the Euler characteristic provide a computable, robust, and powerful tool for data aggregation. No background in topology or data will be assumed. The talk is suitable for undergraduates interested in learning about a different calculus.

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