

Undergraduate Mathematics Colloquium

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The mathematics in continuum mechanics

Friday September 29

Talk at 4:00 in Herman Brown 227

Tea at 3:30 in Herman Brown 438

ABSTRACT:

There are many interesting complex dynamical systems in physics, biology and other sciences. These systems have large sizes, and therefore very hard to solve. Continuum mechanics aims to reduce the size of the systems while still capturing the important macroscopic behaviors. In this talk, I will explain how mathematical models in continuum mechanics can be constructed to simplify the complex structures of large dynamical systems.

We will explore four applications:

- (1) steering a cup of coffee;
- (2) traffic flows on highway;
- (3) tracking a hurricane;
- (4) modeling animal swarms.

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