

The SUMO Speaker Series for Undergraduates

(Pizza Provided)

Wednesday, January 5th

NEW TIME: 4:15-5:05, room 380C

Capillary Surfaces

Professor Robert Finn



ABSTRACT:

It would be hard to get through a day without encountering surfaces separating distinct adjacent fluids. In a grotesque accident of history, all such things have come to be labeled capillary surfaces (capillus = hair in Latin). You encounter them whenever you drink a glass of water or wash your face, or sing in the rain or enjoy a candlelit dinner. They appear in all sizes, from microscopic to planetary and beyond. Experience has let us adapt to everyday occurrences, but the needs of quantitative theory lead to challenges that defy traditional methods. The formal equations have beautiful geometric form, but almost no exact solutions are known, and surprising things happen that have yet to be clarified. Some of the simplest problems were solved in approximate form during the 19th century. These “solutions” are still routinely used by engineers as models for general behavior, however recent discoveries (in some of which Stanford students participated) have shown that such procedures can lead to major errors. I will discuss the state of the theory, with emphasis on current unsolved problems.

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