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Flowing Foam: T1 events and solid-liquid transitions.[1] MICHAEL DENNIN, Department of Physics and Astronomy, UC Irvine — Flowing aqueous foam is found in many applications ranging from oil recovery, to fire fighting, to spreading shaving cream. Aqueous foam consists of gas bubbles with liquid walls. One of the striking features of foam is that despite being composed entirely of fluids, its mechanical properties are either those of a solid (elastic response) or fluid (viscous flow), depending on the nature of the applied stress and strains. We study the transition between these two regimes using a model foam system: bubble rafts. Bubble rafts are a single layer of bubbles floating on the air-water surface. This allows us to track the motion of all the bubbles during flow. In this talk, we will present two main results. First, we will discuss the observation of the coexistence between a solid-like and fluid-like state during flow. Second, we will discuss the role played by nonlinear, topological rearrangements, known as T1 events, in determining the mechanical response of the system.

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Michael Dennin
UC Irvine

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