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Novel Shear Banding in 2D Foam Probes Soap Film Friction[1] JAMES GLAZIER, Indiana Univesity, ARIEL BALTER, Indiana University, REBECCA PERRY, Bowdoin College — A flowing 2D foam (a single layer of bubbles between two glass plates), experiences dissipation from two sources: soap flims moving against the glass plates and soap flims moving against each other. We present preliminary results showing how a new type of shear banding helps us study these various drag forces. We experimentally generate a shear band by injecting air part way along a flowing bubble field in a narrow Hele-Shaw cell. The injected air inflates bubbles as they flow by. These bubbles form an independently flowing channel down the middle of the Hele-Shaw cell. The width and velocity of this channel appear to be selected by the system minimizing the total dissipation. We propose a simple model that agrees with the experimental data. Also, numerical simulations using the Cellular Potts Model (*CPM*) software *CompuCell3D* appear to faithfully reproduce this shear band phenomenon. Agreement between our expeirment and simulations provide support for *CPM* methods for studying foam rheology.

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James Glazier
Indiana University

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