

Abstract Submitted
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Flat Physics in the Laboratory: A System to Study 2-D Physics in flowing Soap Films DAVID HORNE, LILY ZHENG, Gannon University — The behavior of vortices and turbulent flow around structures in a 2-D film is a subject of much theoretical and practical study. We present the design of a cost effective, easy to construct, reconfigurable apparatus to generate long lived, stable soap films in the laboratory suitable for demonstrations and deeper investigations of fluid mechanics problems including turbulence, 2-D vortex-vortex interactions and wakes generated by obstructions and streamlined surfaces. The aim of this project is to observe, record and analyze these effects in a laboratory environment using equipment constructed on a modest budget and employing easy to acquire materials. Flow is controlled by a digital computerized flow control valve and vortices/flow patterns are imaged from a computer-controlled camera system using high resolution photography and slow motion movies to study these features in detail. This project is designed to be accessible to research students at the undergraduate and graduate level or the researcher operating on a budget.

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