

Abstract Submitted  
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**Spinning Tubes: An Authentic Research Experience in a Three-Hour Laboratory** ARNOLD SIKKEMA, Trinity Western University, STEVEN STEENWYK, Calvin College, JOHN ZWART, Dordt College — We present a three-hour lab exercise which is a microcosm of physics research, starting with the discovery of an intriguing and mysterious phenomenon, and including participation in “research conferences” and the interplay of theory and experiment. Students are given a small segment of PVC pipe marked at opposite ends with different symbols and instructed to observe what happens when it is placed on a horizontal surface and one end pushed downward by thumb to initiate a rotation. Most students immediately recognize the amazing result that the symbol at one end is visible while the other is not, and set about trying to discover why. Working in pairs initially, they are provided with opportunities to request equipment from a “granting agency” and conferences and collaborations are encouraged. The main objective of the lab, to experience the scientific enterprise, is achieved without difficulty as the students are quickly caught up in their search for explanations, usually culminating in a full-class effort with significant contributions coming from all quarters.

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