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Facilitating Novel Laboratory Experiences in Introductory Mechanics with Open Source Physics MICHAEL GALLIS, Pennsylvania State University — The Open Source Physics Project provides accessible tools that can allow faculty to explore unusual topics not often explored in first-year mechanics courses. Using the Tracker video analysis program, virtually any physical phenomenon that can be caught on camera can be measured, analyzed, and modeled using built-in tools. Easy Java/Javascript Simulations (EJS), an authoring tool for creating interactive simulations, allows faculty (and students) to quickly develop ancillaries that can be used to explore unusual topics for these courses. In this talk, I discuss the role of Open Source Physics in the implementation of three activities: beach ball physics, where drag, buoyancy, terminal velocity and the Magnus effect all play significant roles; scale model rubber band bungee jumping with applications of work and energy concepts, as well as elastic hysteresis; a conical pendulum experiment using tetherball-like apparatus exploring circular motion in three dimensions and including the effects of air resistance. In these three activities, EJS-based simulations were an important part of topic introduction and exploration and Tracker was an essential tool for measurement and analysis.

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