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### **Video Analysis and Modeling in Physics Education<sup>1</sup>**

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The Tracker video analysis program allows users to overlay simple dynamical models on a video clip. Video modeling offers advantages over both traditional video analysis and animation-only modeling. In traditional video analysis, for example, students measure “g” by tracking a dropped or tossed ball, constructing a position or velocity vs. time graph, and interpreting the graphs to obtain initial conditions and acceleration. In video modeling, by contrast, the students interactively construct theoretical force expressions and define initial conditions for a dynamical particle model that synchs with and draws itself on the video. The behavior of the model is thus compared directly with that of the real-world motion. Tracker uses the Open Source Physics code library so sophisticated models are possible. I will demonstrate and compare video modeling with video analysis and I will discuss the advantages of video modeling over animation-only modeling. The Tracker video analysis program is available at: <http://www.cabrillo.edu/~dbrown/tracker/>.

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