Abstract Submitted
for the PSF12 Meeting of
The American Physical Society

Evaluation of the Xbox Kinect Sensor for Three-Dimensional Positional Data Acquisition JORGE BALLESTER, CHUCK PHEATT, Emporia State University — Microsoft introduced the Kinect sensor in November 2010 as an add-on peripheral for the Xbox 360 video game system. The sensor unit is designed to be positioned above or below a video display and to track player body and hand movements in three-dimensional space, which allows users to interact with the Xbox 360. The device contains a RGB camera, depth sensor, IR light source, three-axis accelerometer and multi-array microphone, as well as supporting hardware that allows the unit to output sensor information to an external device. In this presentation the authors evaluate the capabilities of a stand-alone Kinect sensor as a three-dimensional data acquisition platform for use in physics experimentation. Positional data obtained for a simple pendulum, a spherical pendulum, a projectile and a bouncing basketball will be presented. The expected uncertainty in positional data obtained from the Kinect sensor as well as the authors' graphical interface will also be discussed. Overall, the Kinect is found to be both qualitatively and quantitatively useful as a motion data acquisition device in the physics lab.

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Date submitted: 10 Oct 2012 Electronic form version 1.4