

Study of simple pendulum using tracker video analysis and high speed camera: an interactive approach to analyze oscillatory motion

ABSTRACT

In this paper, we report on the use of Tracker video analysis and high speed camera as an interactive approach to study oscillatory motion of a simple pendulum. Tracker software is basically a computer based learning tool and is preferred because it is free, user friendly and support effective learning and teaching. Combining with the high speed camera that records the motion of pendulum at a frame rate up to 1000 frames per second (fps), analysis of the motion is performed at different angles and video qualities. The periods obtained from the experiment are then compared with the exact period expression and Lima and Arun approximation in order to determine how well this approach suited for the large angle approximation. Results have shown that when the video qualities improved, errors are minimal but errors increased when the angle increased. This research finding shows that this approach is feasible in studying the motion of simple pendulum and at the same time, interactive and inexpensive.

Keyword: High-speed camera; Simple pendulum; Tracker video analysis