Ballistic motion of dust particles in the Lunar Roving Vehicle dust trails

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Abstract. Using video clips from the Apollo 16 mission, we analyze the motion of the dust clouds lofted by the Lunar Roving Vehicle (LRV). Applying the equations of ballistic motion, we obtain estimates of the dust relative velocity, as well as the gravitational acceleration on the lunar surface. By measuring the rotation of the wheel, we also estimate the speed of the LRV. This exercise can be used to develop an educational activity for a high school or introductory level college physics class for the discussions of ballistic trajectories and angular motion.