

Abstract Submitted
for the PSF12 Meeting of
The American Physical Society

Experimental and Numerical Explorations of Water Bottle Rockets BRANDON KEMERLING¹, TIM STILES², MICHAEL SOSTARECZ³, Monmouth College — The simple set up of a 2-liter soda bottle partially filled with water and pressurized air can produce launches with velocities over 100 m/s in less than one tenth of a second. This project used high-speed imagery and tracking software to experimentally determine the position and velocity versus time profile. This study varies the initial air pressure and the water volume of the bottle rockets across a range of pressures from 2.0 to 8.0 times atmospheric pressure and volumes from only compressed air in the bottle to 1700 mL of water in the bottle. The results are consistent with models that include the use of Euler's Equation to model the exit velocity of the water relative to the rocket.

¹Senior Physics/Mathematics double major

²Professor of Physics

³Professor of Mathematics

Brandon Kemerling
Monmouth College

Date submitted: 05 Oct 2012

Electronic form version 1.4