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**Sedimenting spheres in bubbly fluid: a fluid Galton model**

MICHAEL HIGLEY, ANDREW BELMONTE, Pennsylvania State University —  
A solid sphere sinking in a bubbly fluid and a solid sphere falling through a crowded bed of rigid obstacles (in air) share two common traits: the settling speed is slowed by the obstructions, and the sphere exhibits random lateral motion. In a previous study of sedimenting spheres in bubbly fluid we quantified both of these effects. Here we present a mathematical model which begins as an adaptation of Galton's board to the sedimenting sphere, which allows us to introduce various physical effects of the bubbly fluid, and test their importance, particularly bubble collisions. Comparison is made with experimental results.

Andrew Belmonte  
Pennsylvania State University

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