Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Motion of a rigid sphere through an elastic tube THOMAS CAMBAU, JOSE BICO, ETIENNE REYSSAT, PMMH ESPCI PARISTECH — The transport of soft objects through small rigid channels is a common problem in the biological world : red blood cells are deformed when passing through small capillaries and polymer coils can make their way through minute pores. We study the opposite model problem of a rigid sphere moving in a narrower elastic tube. Geometry, mechanical properties of the tube and friction or lubrication conditions determine the dynamics of the entrapped sphere. We present experimental results on this problem, together with scaling law analysis.

Thomas Cambau
PMMH ESPCI PARISTECH

Date submitted: 15 Dec 2011 Electronic form version 1.4