Abstract Submitted
for the DFD06 Meeting of
The American Physical Society

The Dynamics of Sinking DOMINIC VELLA, PAUL METCALFE, University of Cambridge — Jumping water striders trust that the interface will be strong enough to catch them when they land. We study the dynamic response of the interface to the impact of a small body and probe the limits of its dynamic strength. Numerical and asymptotic arguments allow us to understand how an object light enough to be supported in equilibrium by surface tension can sink if it strikes the interface too quickly. We quantitatively determine the relation of this critical impact speed to the object's mass. Jumping water striders are shown to typically lie close to this threshold suggesting that it is the threat of sinking that limits their jumping height.

Dominic Vella
University of Cambridge

Date submitted: 04 Aug 2006 Electronic form version 1.4