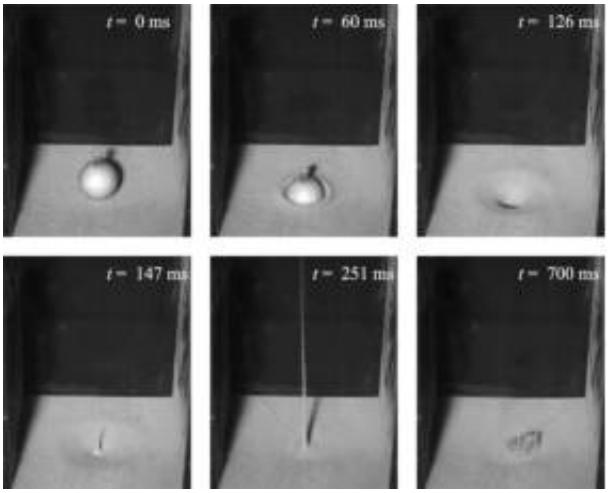
# Disappearing in dry quicksand

December 23 2004




People and even vehicles disappearing in the desert: they are popular myths of desert travelers. In famous books writers like T.E. Lawrence, 'Lawrence of Arabia', let these things happen. They could be more realistic than readers would assume, according to research of prof. Detlef Lohse and his Physics of Fluids group at the University of Twente (Netherlands). They report about 'dry quicksand' in 9 December's issue of *Nature*.

*Image: Six snapshots from a high speed image recording: The snapshots correspond to (a) ball release, (b) sinking, (c) disappearing, (d) void collapse, (e) jet, and (f) granular eruption.*

Lohse and his researchers Remco Rauhé, Raymond Bergmann and Deveraj van der Meer created something they call ‘dry quicksand’. Sand is usually able to support weight relying on internal force chains. The well known quicksand is a mixture with force chains that are substantially weaker. In other words: it is possible to influence the 'support capabilities' of sand.

To create dry quicksand, the scientist filled a container with very fine grain sand (grains of about 0,04 millimetres). The bottom of the container has holes in it, through which air is blown. When the stream of air is closed off, the grains move down to form a very loose packing (just 41 vol percent).

Touching the surface of the sand, the researcher hung a four centimetre pingpong ball on a thin rope. The ball was filled with tiny bronze balls to be able to vary the weight. After the rope is burnt, the ball falls into the sand in one movement. Without any effort, it moves through the sand. The researchers measured the depth by attaching a vertical tail –almost without mass- to the ping pong ball.

Source: University of Twente