

Visualization of Soap Bubble Collapse with Acoustic Pressure Applied

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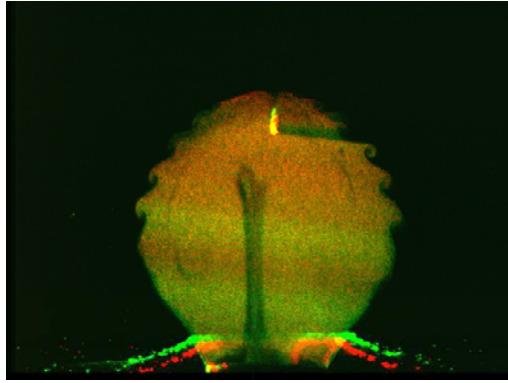


Fig. 1. Soap bubble is pierced to collapse.

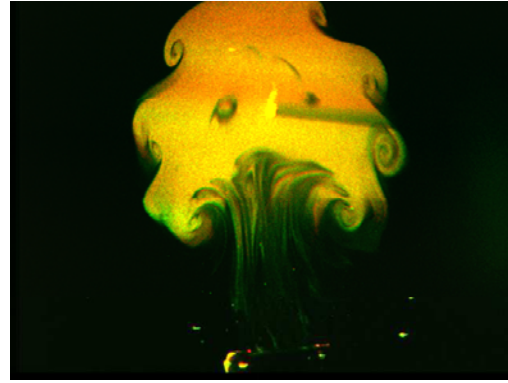


Fig. 2. An entrance jet is induced at the bottom.

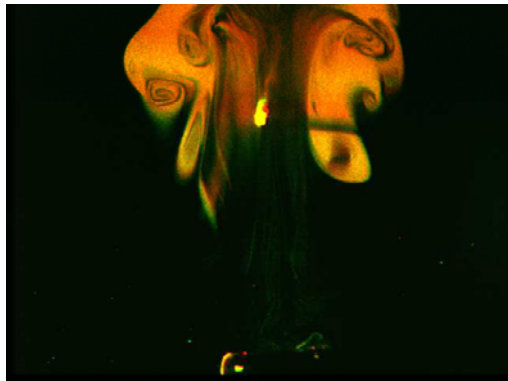


Fig. 3. Kelvin-Helmholtz vortex is formed.

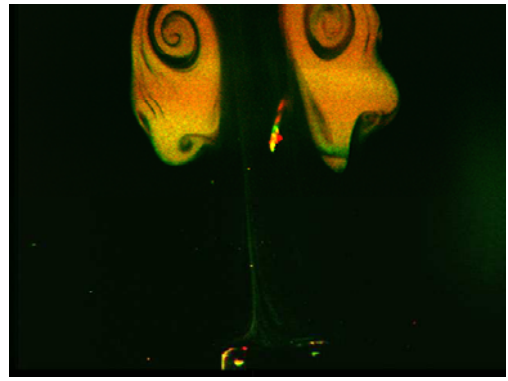


Fig. 4. Two separate vortices are formed.

A soap bubble, filled with smoke and sitting on a ring, is placed in an acoustic chamber with symmetric acoustic pressure applied on the two sides. A needle is used to pierce the bubble at the top. The soap bubble collapsed in such a way that the soap film is not in contact with the smoke, but “peeled away” from the smoke (Fig. 1).

When the bubble has fully collapsed, an entrance jet is induced at the bottom (Fig. 2). Kelvin-Helmholtz vortices are formed both inside and around the edge of the bubble (Fig. 3). Two separate vortices are formed as the entrance jet penetrates through the top of the bubble (Fig. 4).