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**Microgravity Experiment: The Fate of Confined Shock Waves**[1]
P. KOBEL, Laboratoire des Machines Hydrauliques, EPFL, D. OBRESCHKOW, N. DORSAZ, A. DE BOSSET, M. FARHAT — *Shockwave induced cavitation* is a form of hydrodynamic cavitation generated by the interaction of shock waves with vapor nuclei and microscopic impurities. Both the shock waves and the induced cavitation are known as sources of erosion damage in hydraulic industrial systems and hence represent an important research topic in fluid dynamics. Here we present the first investigation of shock wave induced cavitation inside *closed and isolated* liquid volumes, which confine the shock wave by reflections and thereby promise a particularly strong coupling with cavitation. A microgravity platform (ESA, $42^{nd}$ parabolic flight campaign) was used to produce stable water drops with centimetric diameters. Inside these drops, a fast electrical discharge was generated to release a strong shock wave. This setting results in an amplified form of shockwave induced cavitation, visible in high-speed images as a transient haze of sub-millimetric bubbles synchronized with the shockwave radiation. A comparison between high-speed visualizations and 3D simulations of a shock front inside a liquid sphere reveals that focus zones within the drop lead to a significantly increased density of induced cavitation. Considering shock wave crossing and focusing may hence prove crucially useful to understand the important process of cavitation erosion.

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Philippe Kobel
Laboratoire des Machines Hydrauliques, EPFL

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