# Colloquium

MAX PLANCK INSTITUTE
FOR DYNAMICS AND
SELF-ORGANIZATION

# Rigid boundaries and why they aren't: from hard to softer matter cavitation


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Beyond the spherical collapse bubbles shrinking near a single infinitely extended boundary is the second simplest problem in cavitation research. Yet its extraordinary rich dynamics has not stopped to challenge and surprise us. I'll provide recent findings of the extraordinary strong tangential stresses pushing on the boundary and the very fast needle-like jet (prosed in Göttingen) that occur only at close distances of the bubble. To understand why cavitation is so erosive, a look at the final stage of cavitation bubble collapse provides insight how the loss of axisymmetry results in energy focusing. By adding a second boundary and nucleating cavitation within this thin liquid gap we were able to create very high tension. Here, the boundary guides a liquid Lamb wave, i.e. the small but not negligible "softness" is responsible for the nucleation of secondary cavitation. With this simple fluidic system we revealed that local supersaturation of gases created either from heating or at liquid-liquid interfaces are cavitation nuclei. I would like to conclude the presentation with the recent findings of cavitation induced shear waves within elastic materials. These can be detected with plane wave ultrasound and thus offer a means to monitor thermal ablation in medical treatment of tumors.


**Wednesday, May 18th, 2022 at 2:15 pm**

Video conference at www.zoom.us
Meeting ID: 959 2774 3389
Passcode: 651129, direct link


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