„Standard“ jets and fast jets from laser-generated bubbles close to a solid boundary

Christiane Lechner[1,2], Max Koch[1], Werner Lauterborn[1], Robert Mettin[1]

[1] *III. Physikalisches Institut, Universität Göttingen*
[2] *Institut für Strömungsmechanik und Wärmeübertragung, TU Wien*

Cavitation bubbles expanding and collapsing close to a solid wall are known to develop a liquid jet that is directed towards the solid. Its formation can be attributed to the presence of the wall causing an asymmetric inflow during the collapse phase. Jet speeds typically are of the oder of 100 m/s[1]. Recently, it has been demonstrated numerically, that this standard picture of jet formation loses its applicability, when the bubble is generated very close to the wall[2]. For an initial dimensionless distance less than 0.2 from the wall, very thin jets with speeds of the order of 1000 m/s are formed. We present numerical results from finite volume simulations in axial symmetry describing the mechanism leading to fast jet formation, as well as the regimes of the „standard“ jet and the fast jet as functions of the bubble‘s initial distance from the wall.

Kontakt: christiane.lechner@phys.uni-goettingen.de
christiane.lechner@tuwien.ac.at

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