

On the sound of snapping shrimp

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Fluid dynamics video: Snapping shrimp produce a snapping sound by an extremely rapid closure of their snapper claw. Our high speed imaging of the claw closure has revealed that the sound is generated by the collapse of a cavitation bubble formed in a fast flowing water jet forced out from the claws during claw closure. The produced sound originates from the cavitation collapse of the bubble. At collapse a short flash of light is emitted, just as in single bubble sonoluminescence. A model based on the Rayleigh-Plesset equation can quantitatively account for the visual and acoustical observations.

The video “On the sound of snapping shrimp” contains various sequences of the animal itself, the claw closure, the bubble formation and its collapse, and an animated explanation of the hydrodynamical model.

For further reading we refer to references [1, 2, 3].

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- [1] M. Versluis, A. v. d. Heydt, B. Schmitz, and D. Lohse, *Science* **289**, 2114 (2000).
 - [2] D. Lohse, B. Schmitz, and M. Versluis, *Nature* **413**, 477 (2001).
 - [3] M. Versluis, A. v. d. Heydt, B. Schmitz, and D. Lohse, *Phys. Fluids* **13**, S13 (2001).