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The Timing of Sonoluminescence[1] THOMAS BRENNAN, West Virginia Weleyan College, GUSTAVE FRALICK, NASA Glenn Research Center — We measured the timing of the sonoluminescence flash by scattering laser light from the bubble. We performed this measurement on 17.8 kHz, 13.28 kHz and 7920 Hz systems and found that the flash typically occurs 100 nanoseconds before the minimum radius, contrary to previous claims that the flash always occurs within a nanosecond of the minimum radius. These results are important because they imply that previous *hot* models of sonoluminescence are wrong. We propose a new model: that the flash results from the discharge of an excited cold condensate, formed during the adiabatic expansion of the bubble.

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