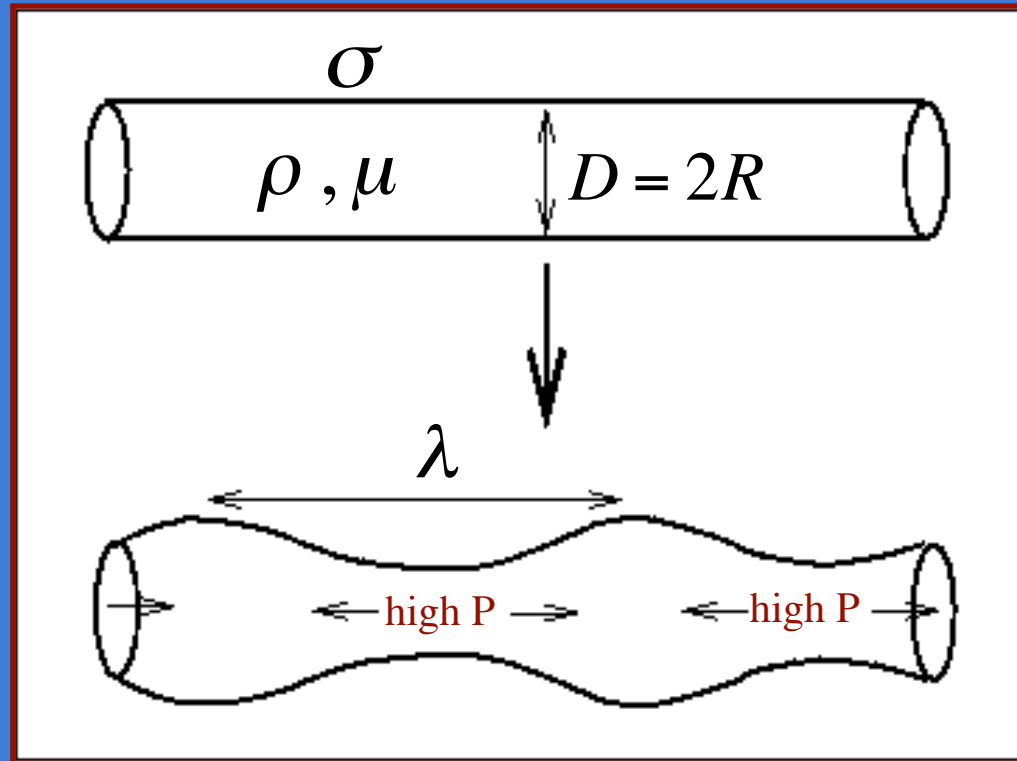


18.357: Lecture 12

Variations on the theme of Rayleigh-Plateau & Sheet retraction

Viscosity and the Rayleigh-Plateau Instability



- pinch-off depends on Ohnesorge number $Oh = \frac{\sigma R}{\mu \nu}$
- at high Oh: $\tau_p \sim \left(\frac{\rho R^3}{\sigma} \right)^{1/2}$ and $\lambda = 9.02 R$
- at low Oh: $\tau_p \sim \frac{\mu R}{\sigma}$ and λ increases with μ

Coating a wire

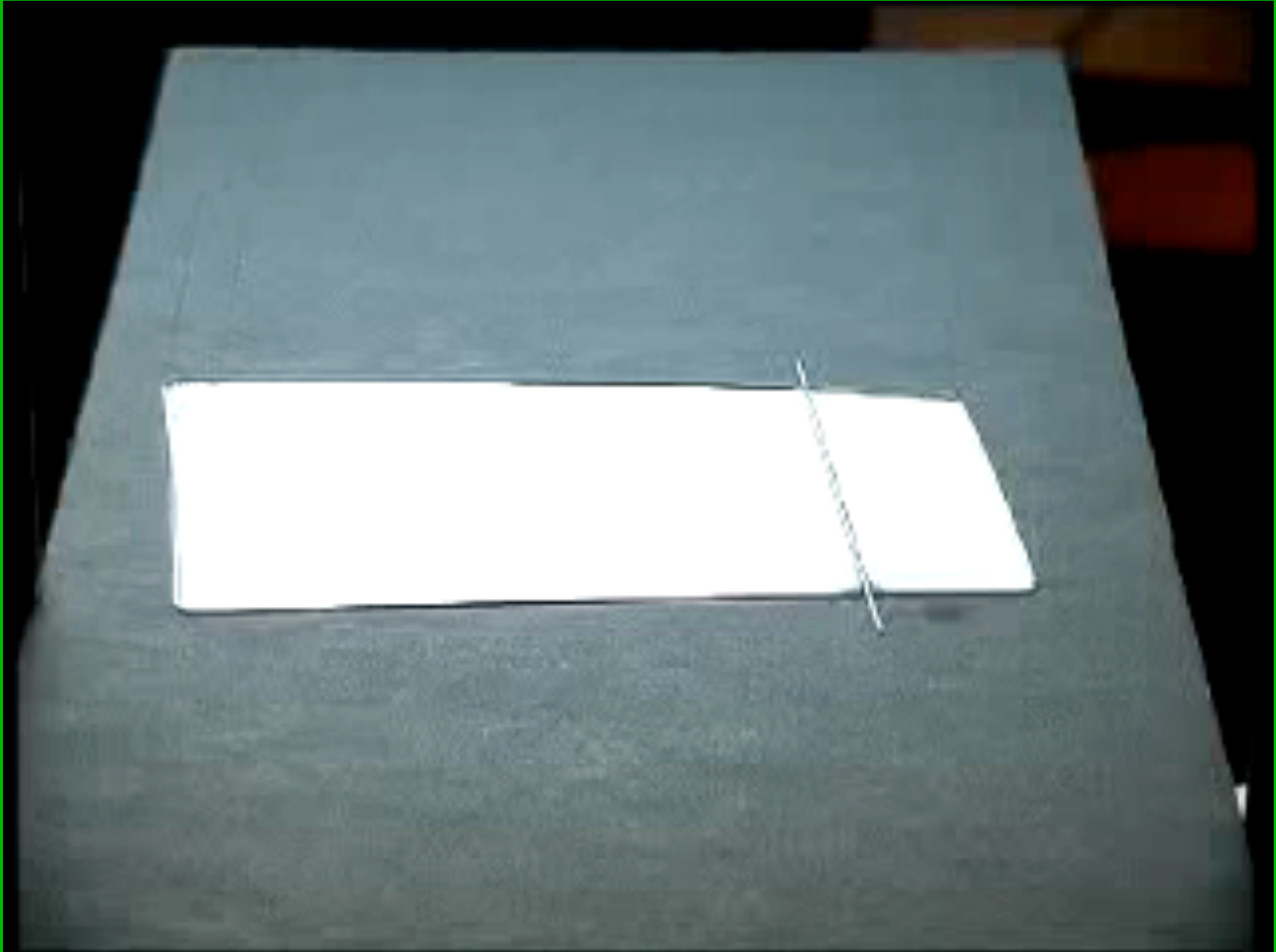


Bubble formation within a hose



Fluid sheets

A burst soap film

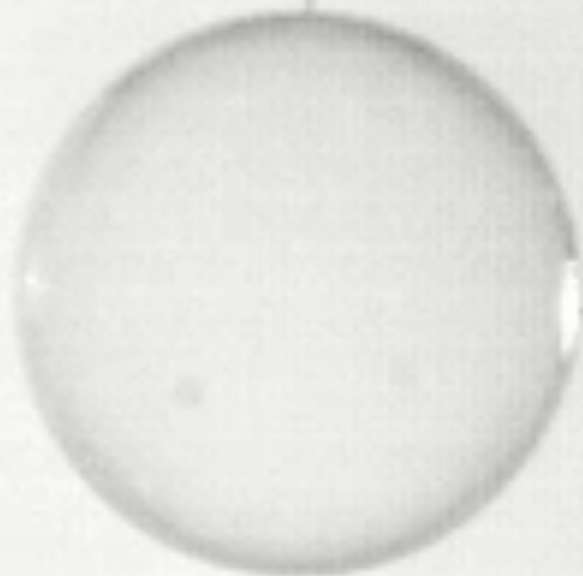


How fast does the rod move?

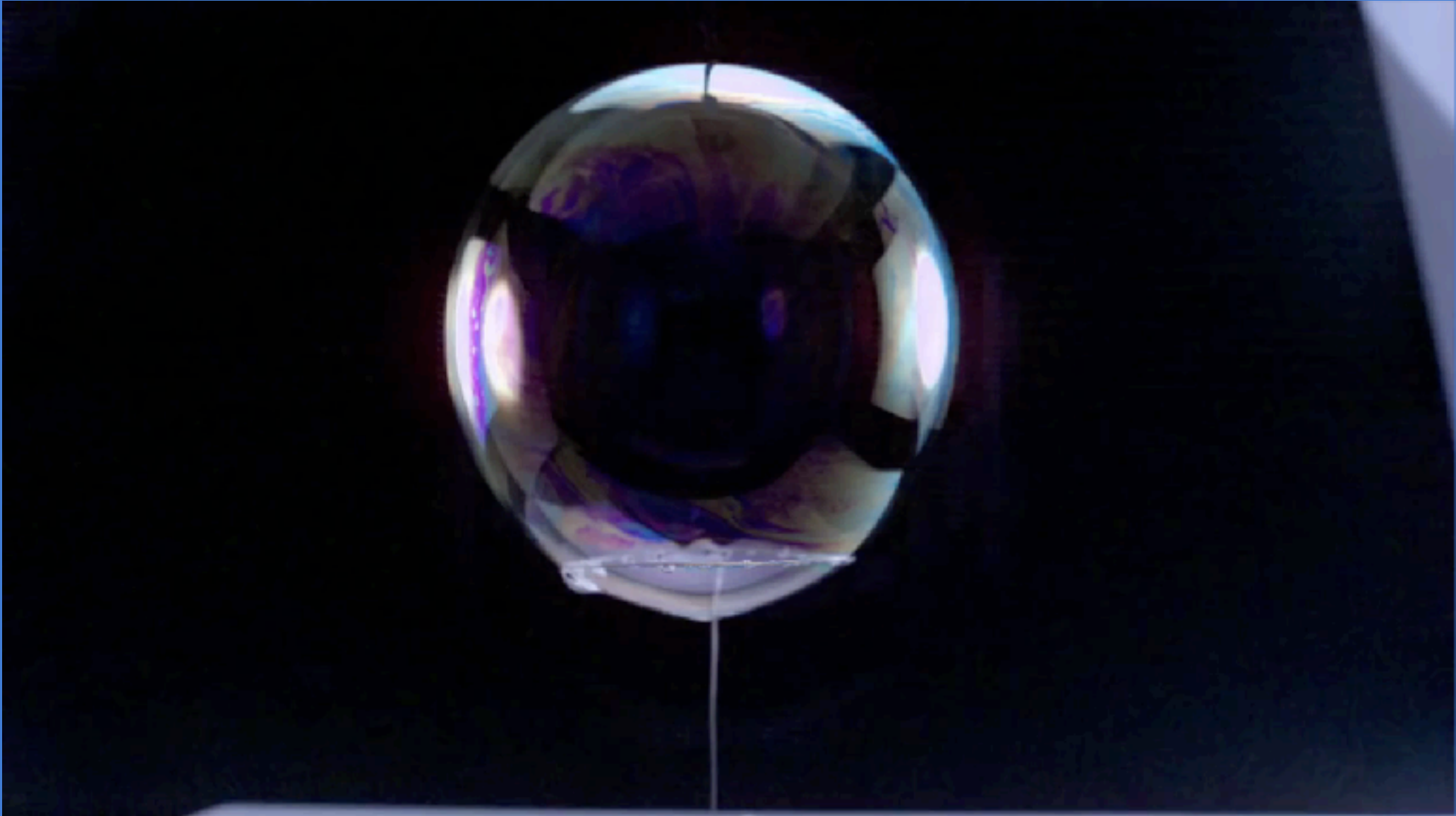
A bursting bubble



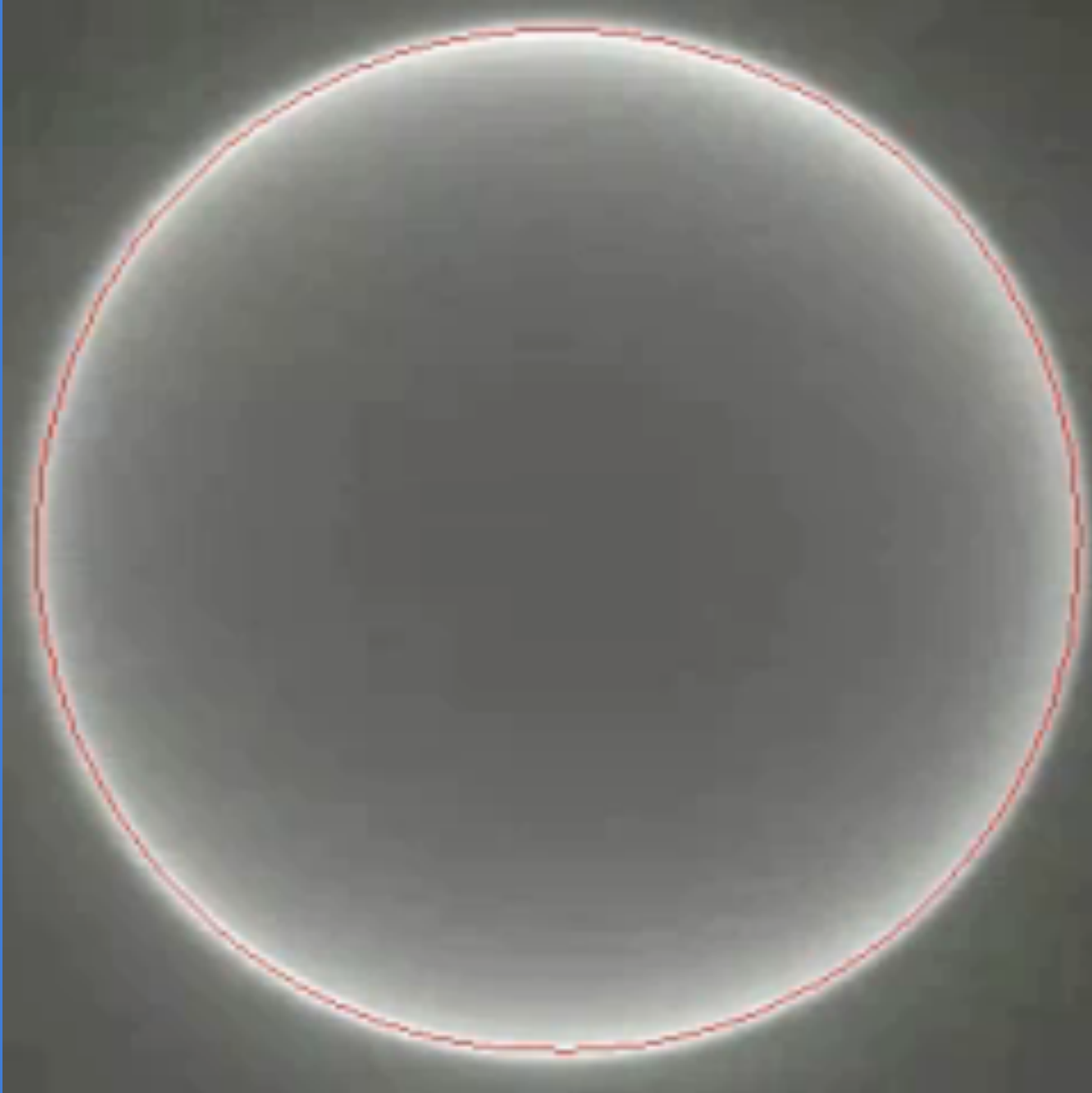
Speed of retraction? Film shape?



Another look at film retraction



A self healing bubble



The mysterious aftereffects
of COVID-19 infection p. 634

Discharging Fukushima's
legacy p. 621

New tools for neuromodulation
win Science & PINS prize p. 637

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BUBBLE RUPTURE

Surface tension drives the wrinkling and collapse in viscous fluids p. 635



