From turbulent to laminar bubble breakup

Bubble size distribution in turbulence
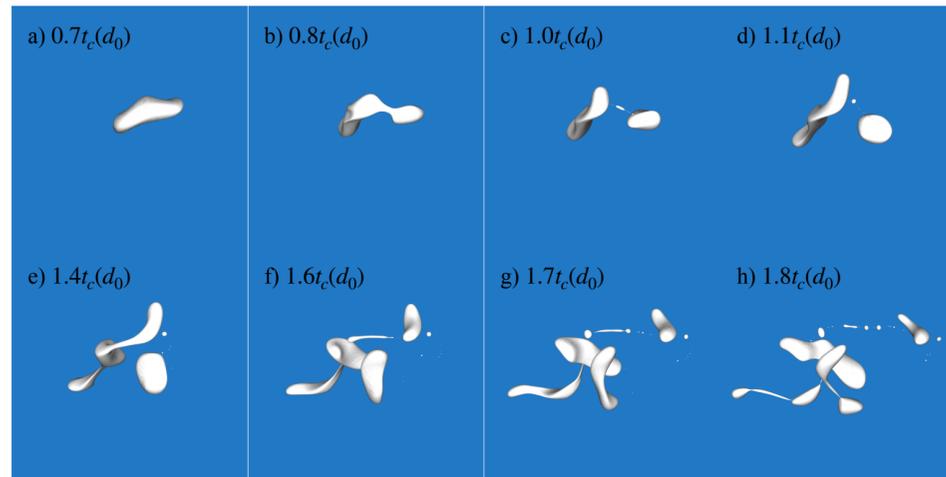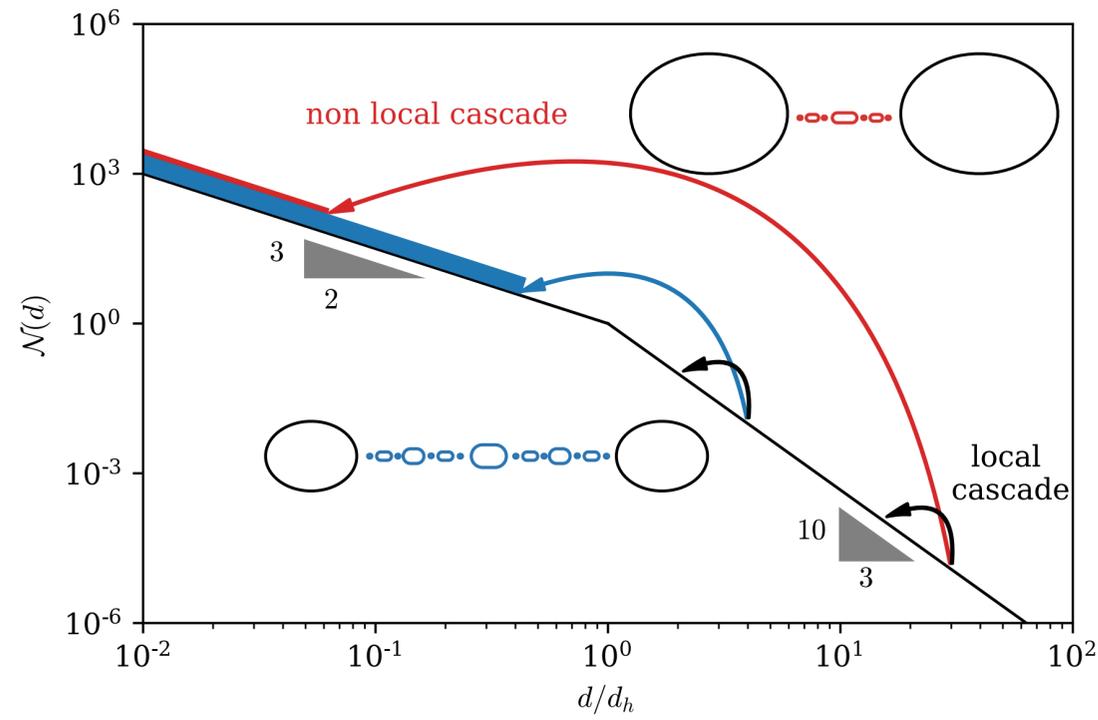
Bubble size distribution under stretching

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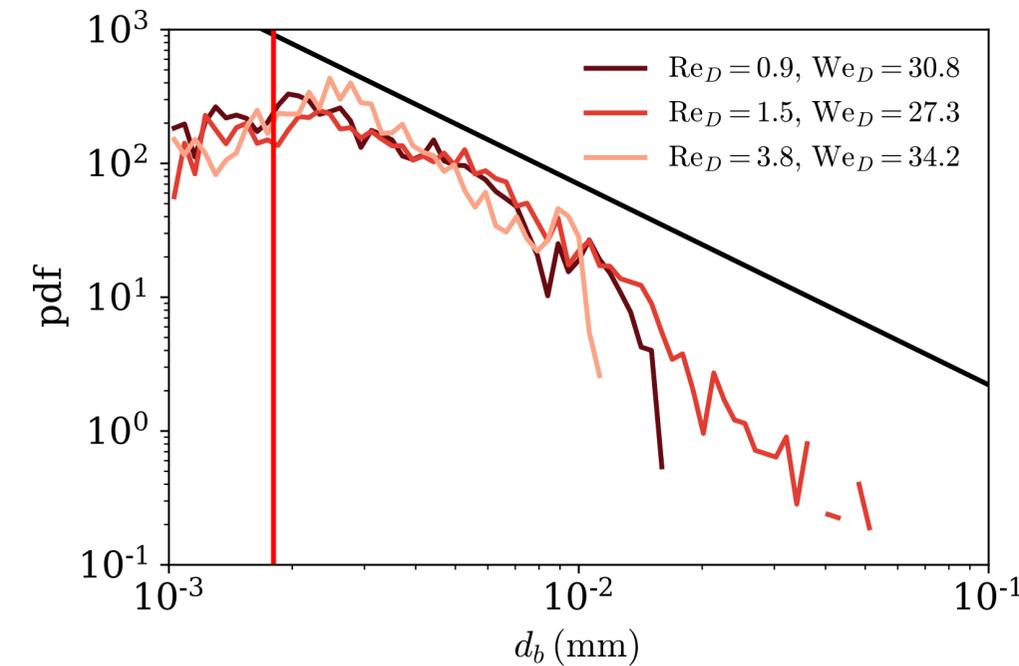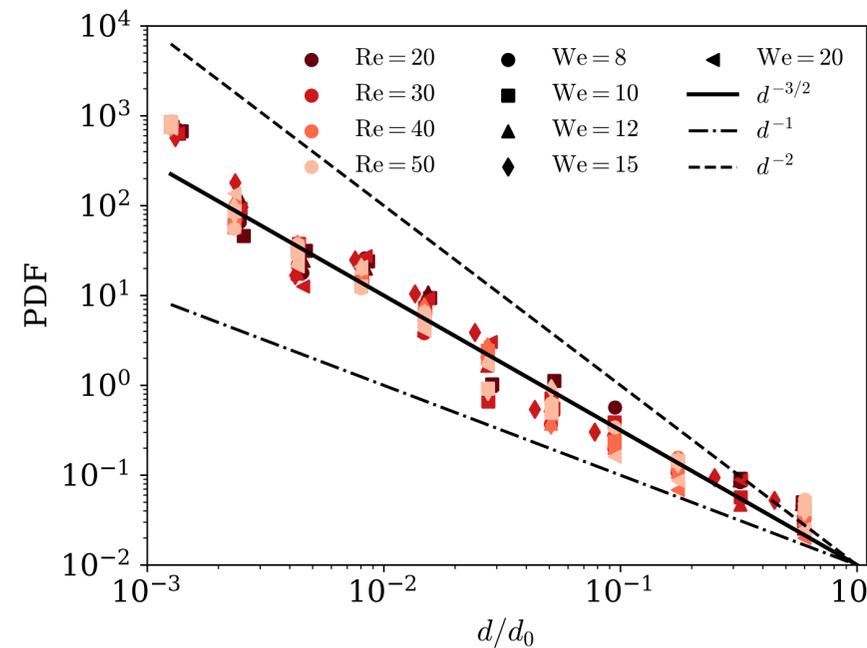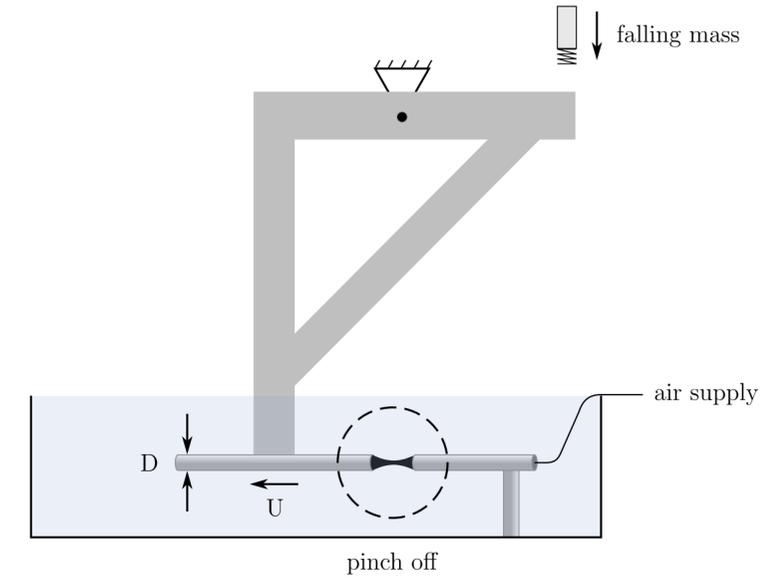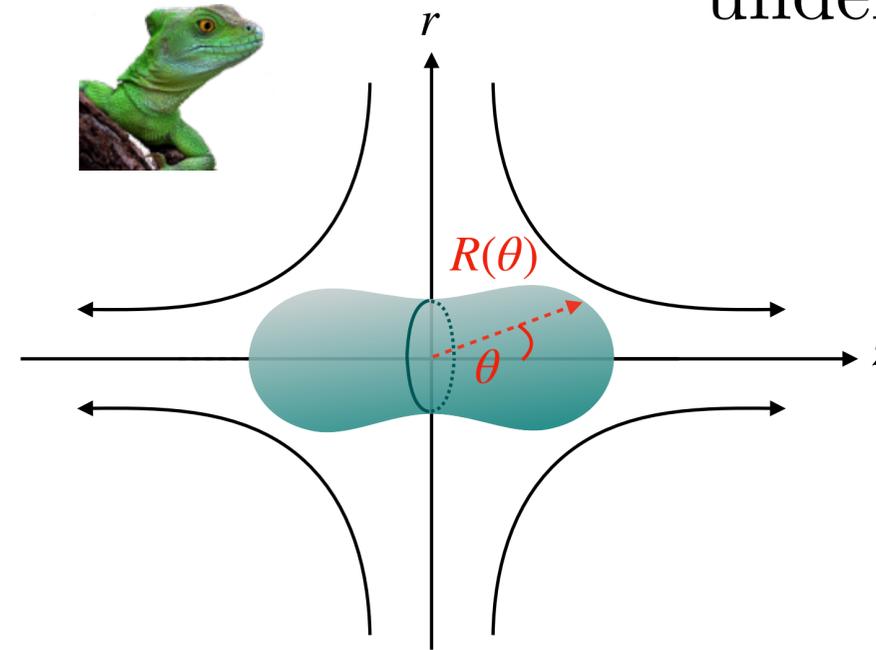
Deterministic model for filament splitting

$$\frac{d_{k+1}^{1/n} - d_k^{1/n}}{d_{k+1} + d_k} = C(\text{We}, \text{Re}) \qquad \mathcal{N}(d) \sim d^{(-2n+1)/n}$$
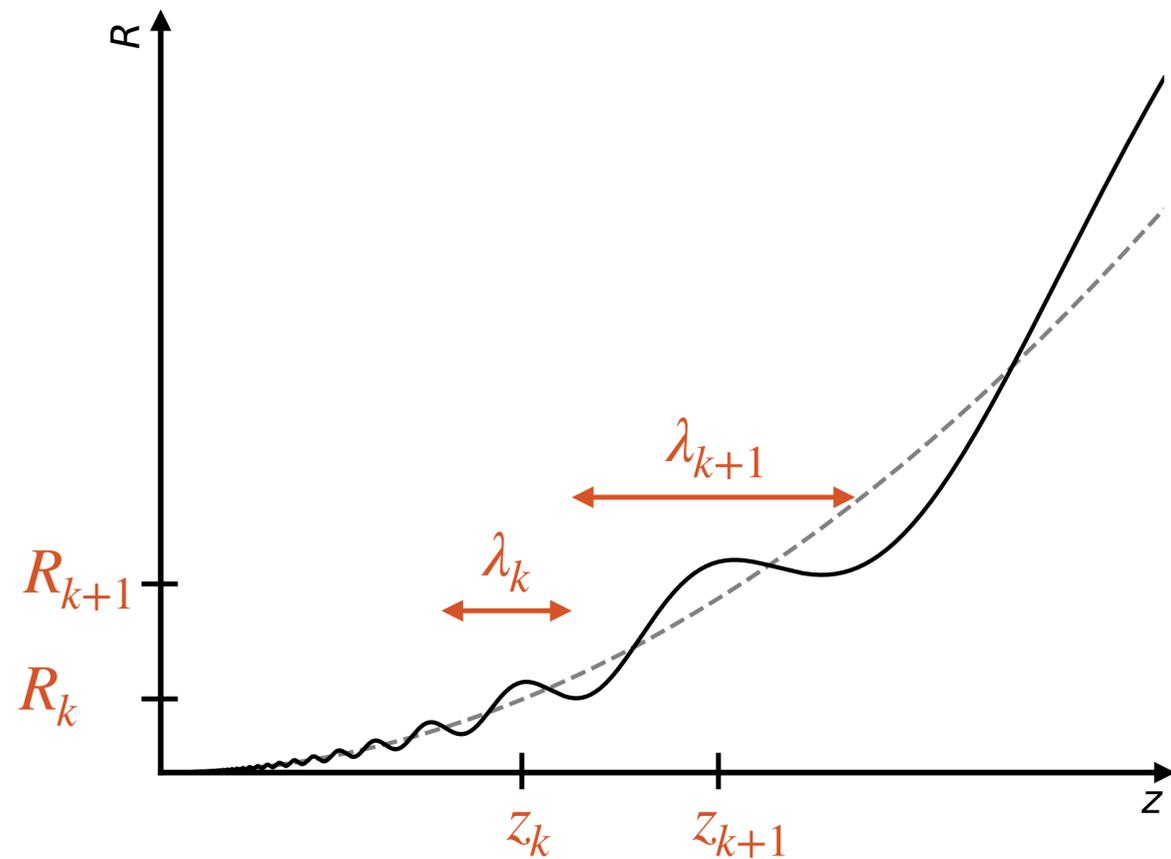
For $n = 2$, $\mathcal{N}(d) \propto d^{-3/2}$

▸ Axi-symmetric cone $R(z) \sim z^n$

▸ Capillary wave: $\lambda_k \sim R_k$ (Rayleigh-Plateau)

▸ Volume of the k$^{\text{th}}$ bubble $V_k \sim \lambda_k R_k^2 \sim d_k^3$

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