2 questions

P.Raux, P.Reis, J.Bush, J.Aristoff

Principaux ouvrages scientifiques

Operazioni del compasso geometrico et militare di Galileo-Galilei, nobil Fiorentino.

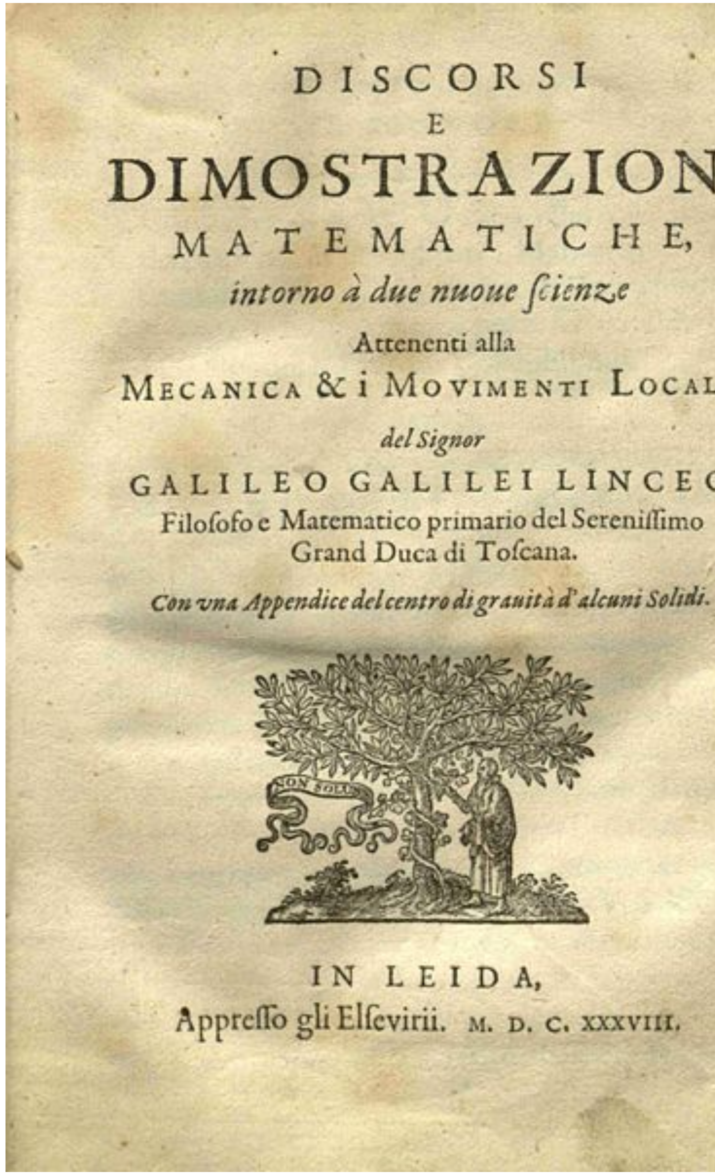
scorso intorno alle cose che stanno in su l'acqua et che in quella si muovono.

dereus Nuncius, magna longeque admirabilia spectacula prodens, etc.

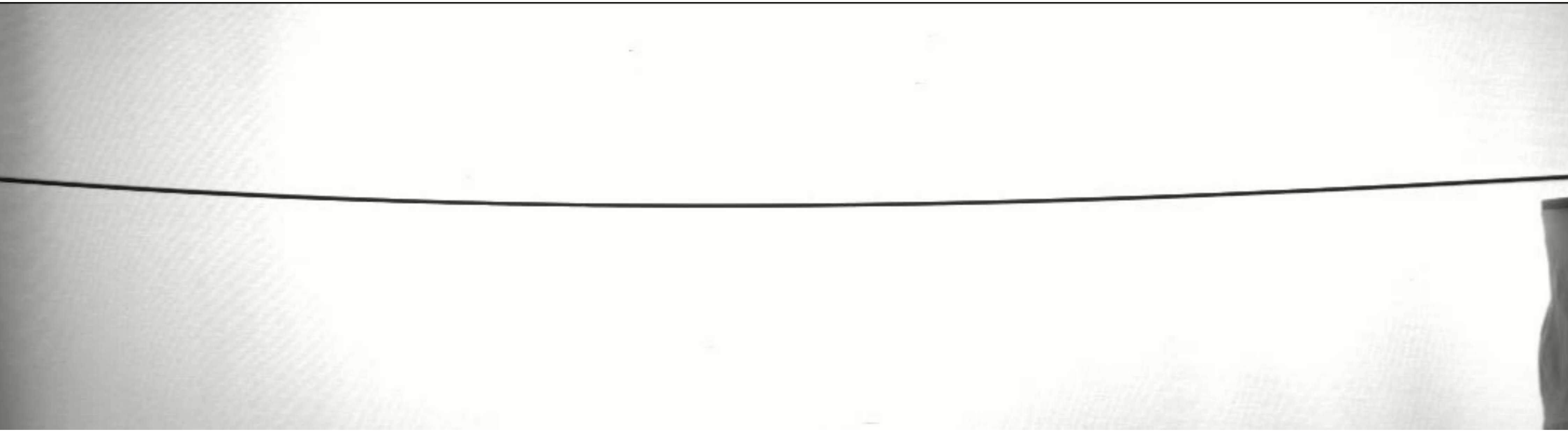
oria e dimonstrazioni intorno alle macchie solari et loro accidenti.

Saggiatore nel quale con bilancia esquisita et giusta si ponderano le cose contenute nella libra
filosofica di Lotario Sarsi, etc.

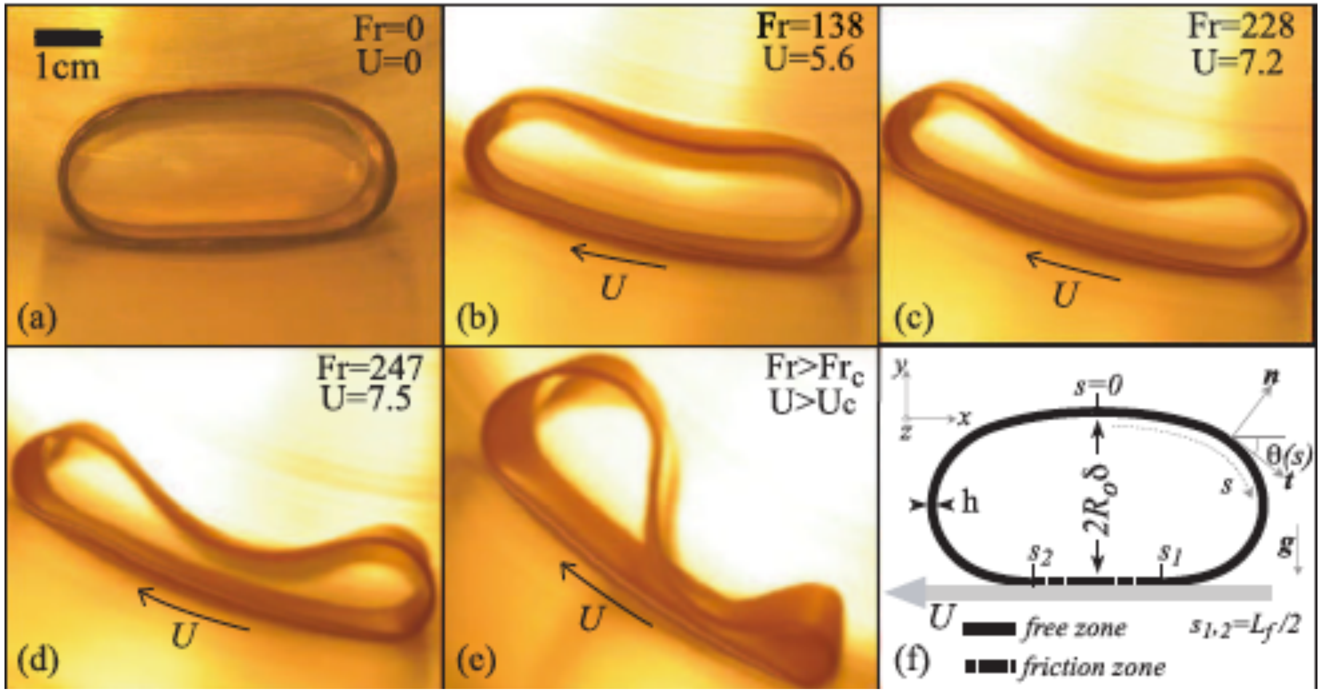
scorsi e Dimonstrazioni matematiche intorno a due scienze attenanti alla mecanica ed i
ali.


DISCORSI
E
DIMOSTRAZION
MATEMATICHE,
intorno à due nuoue ſcienze
Attenenti alla
MECANICA & i MOVIMENTI LOCAL
del Signor
GALILEO GALILEI LINCEO
Filoſofo e Matematico primario del Sereniſſimo
Grand Duca di Toſcana.
Con vna Appendice del centro di grauità d'alcuni Solidi.

IN LEIDA,
Appreſſo gli Elſevirii. M. D. C. XXXVIII.



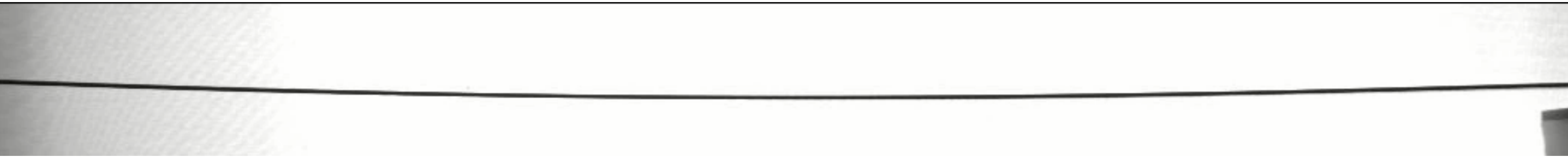
J.Aristoff



1cm
Fr=0
U=0
(a)
Fr=138
U=5.6
U
(b)
Fr=228
U=7.2
U
(c)
Fr=247
U=7.5
U
(d)
Fr>Fr$_c$
U>Uc
U
(e)
y
x
z
s=0
n
θ(s)
t
s
h
$2R_o\delta$
g
s_2
s_1
U
free zone
friction zone
$s_{1,2}=L_f/2$
(f)

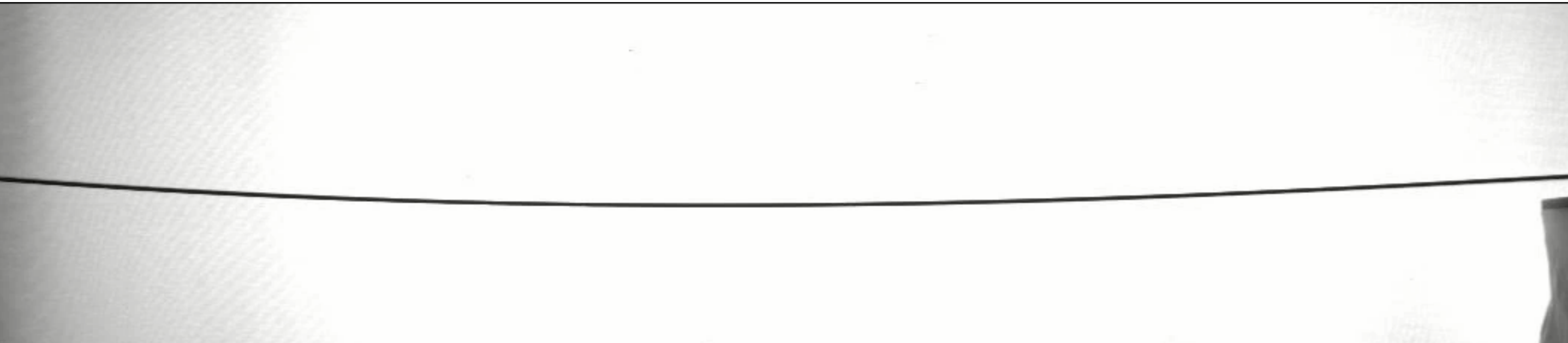
P.Raux

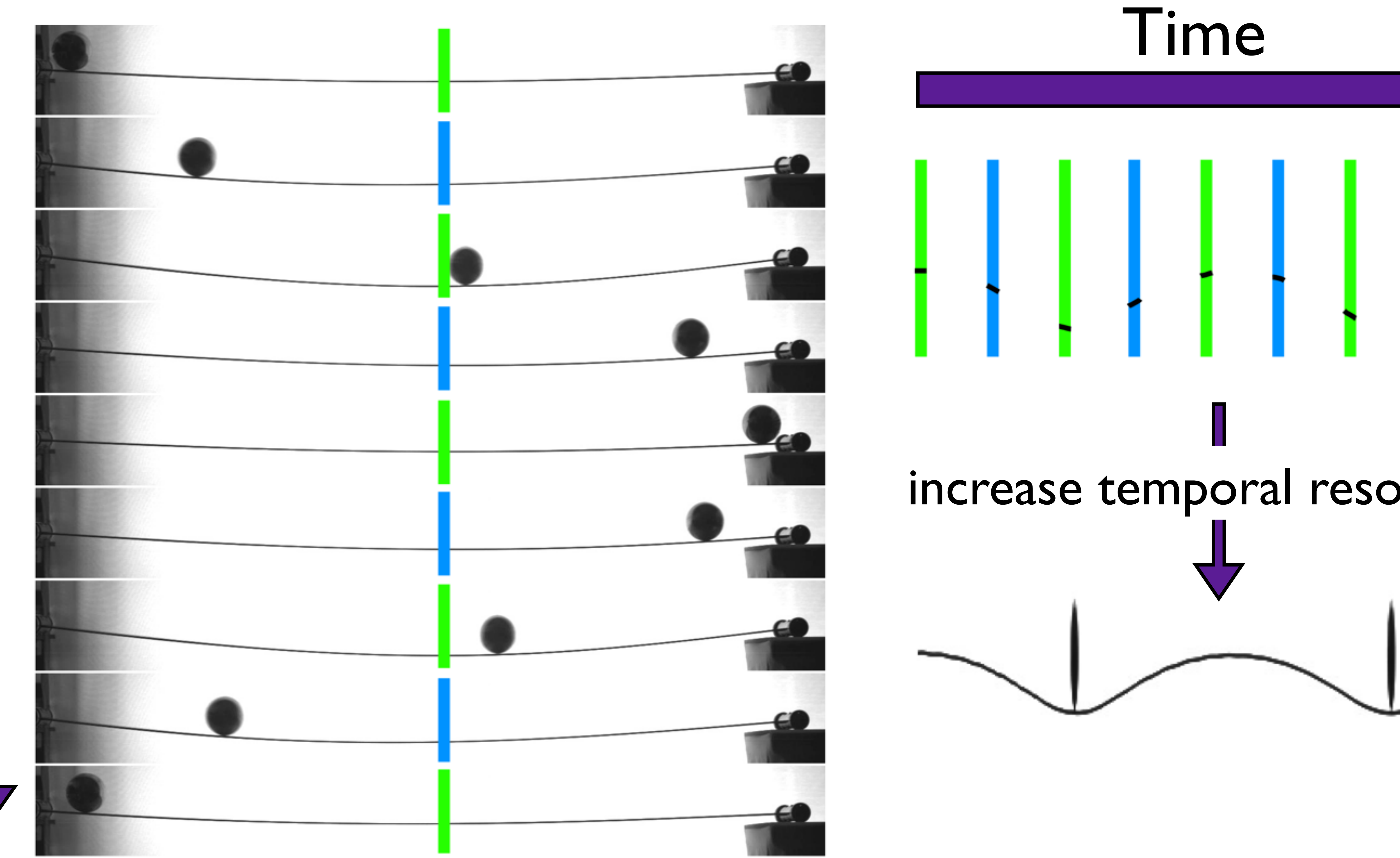
1 inch diameter

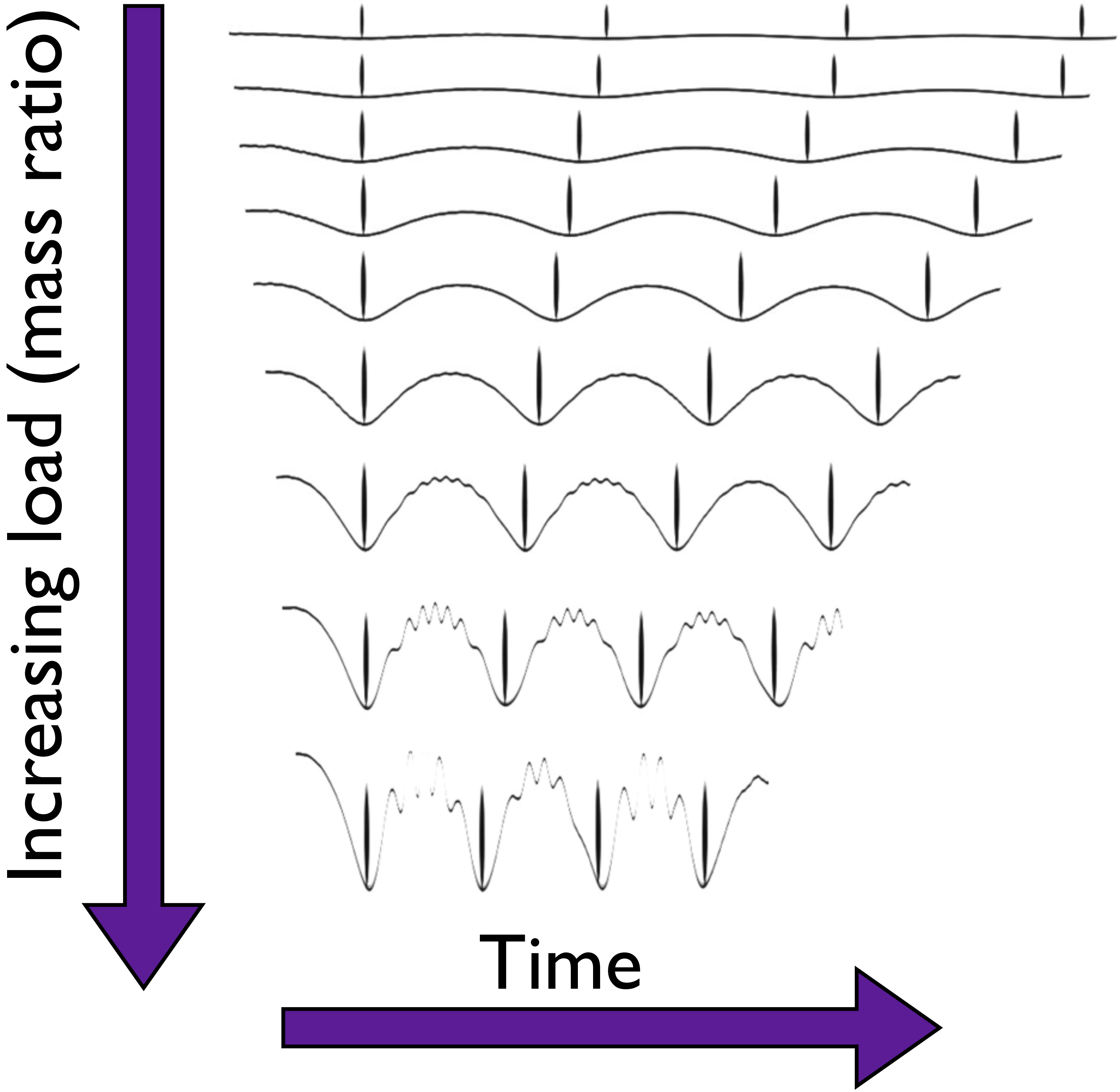


2 inch diameter

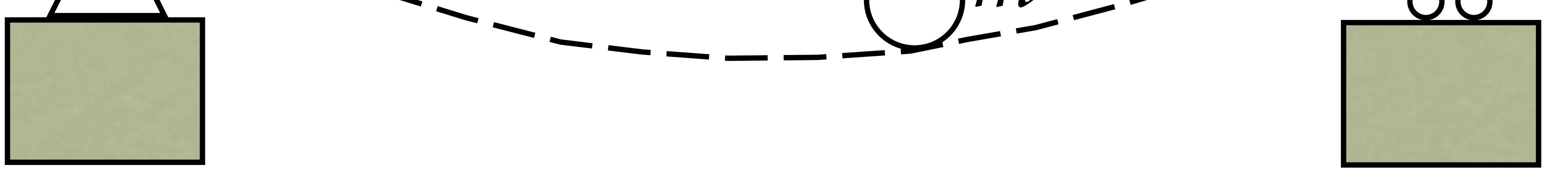
3 inch diameter

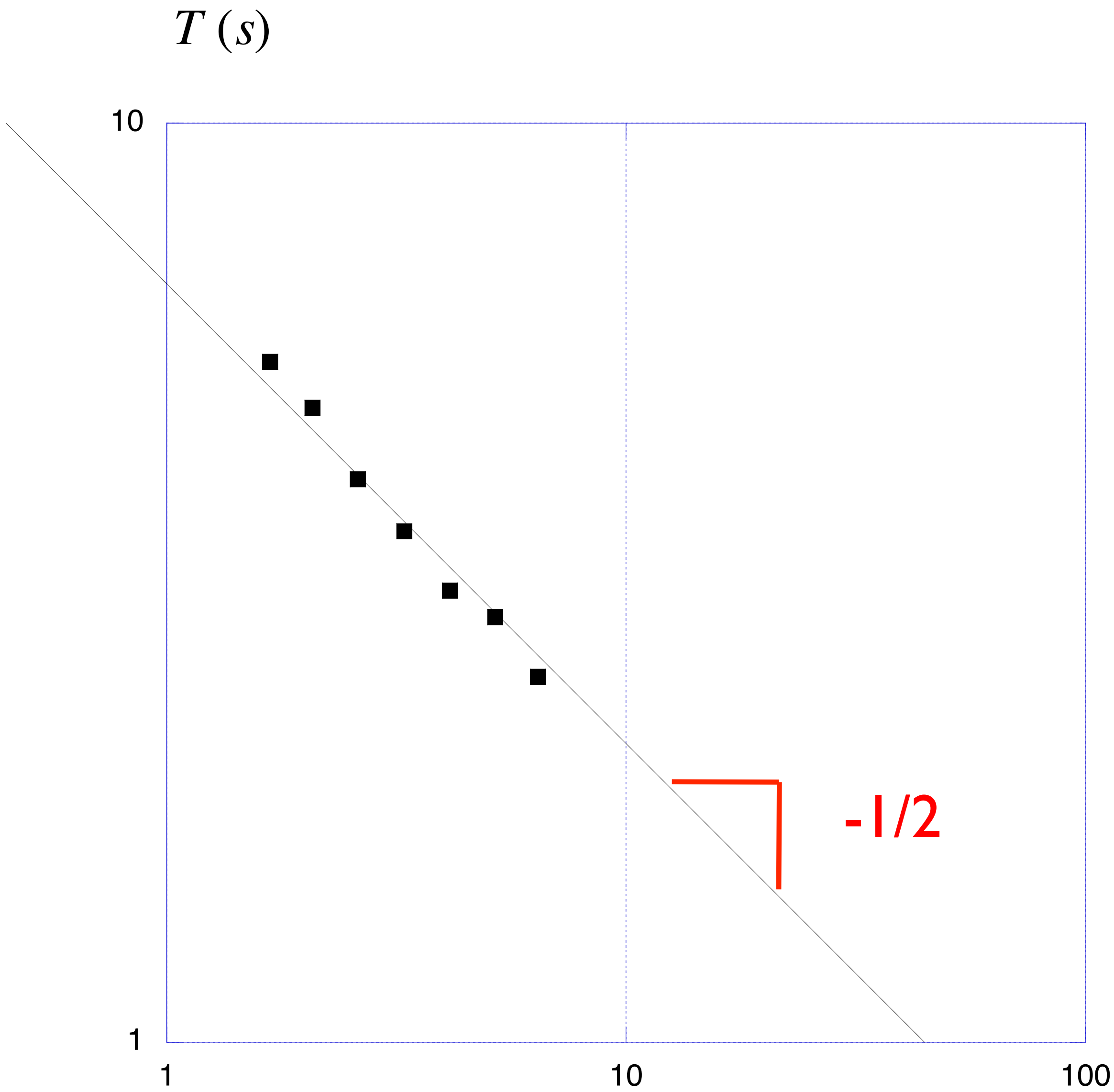



Time
increase temporal reso

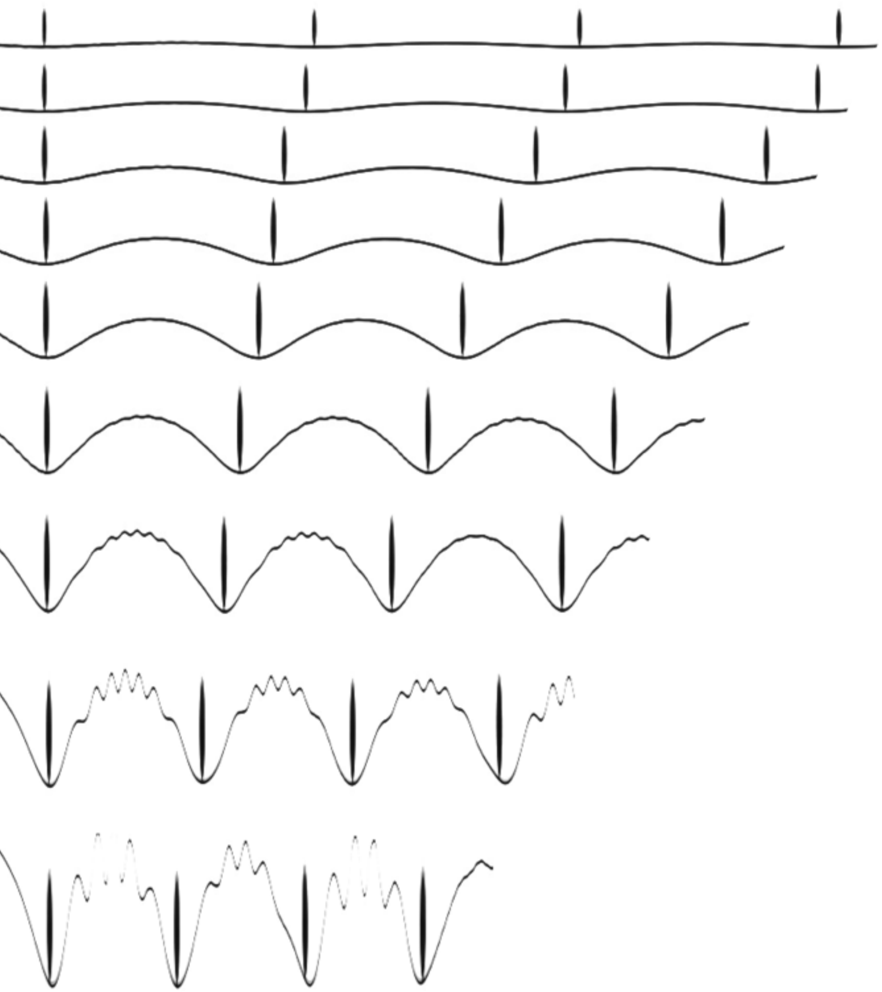


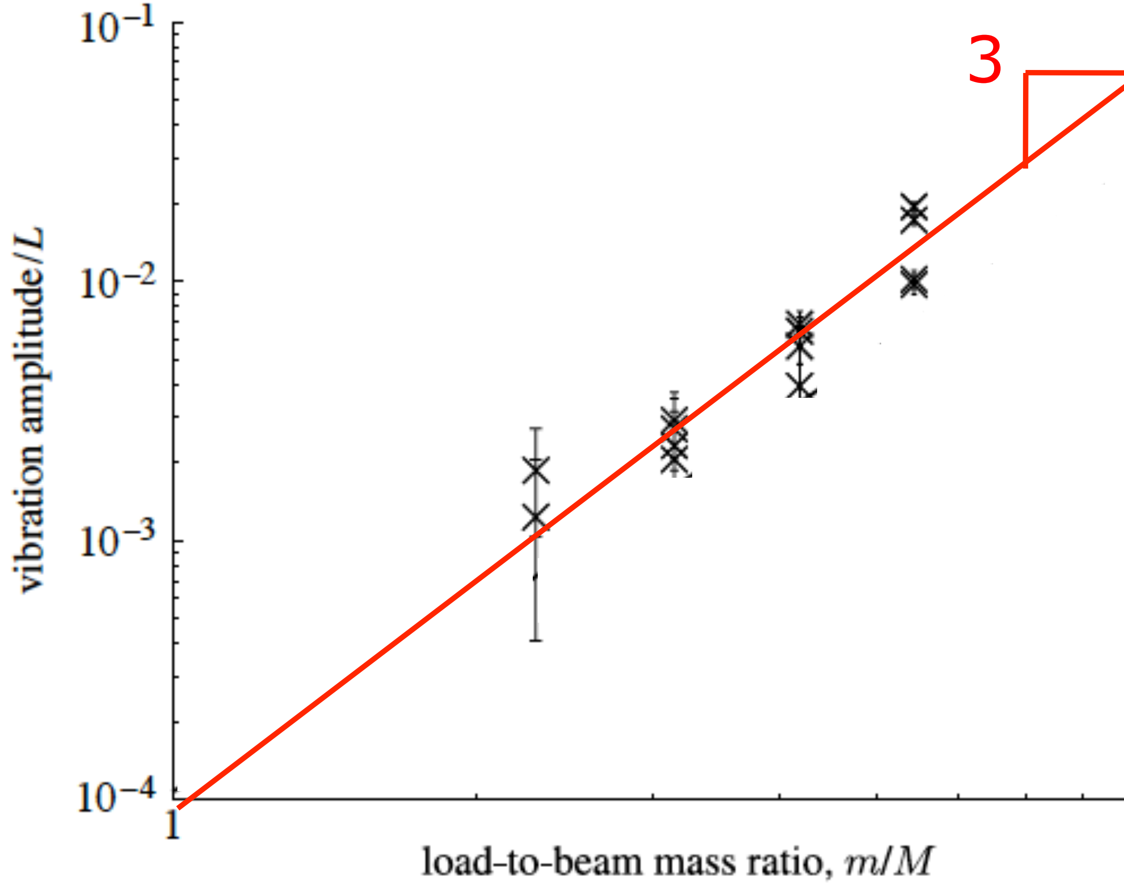
Increasing load (mass ratio)
Time





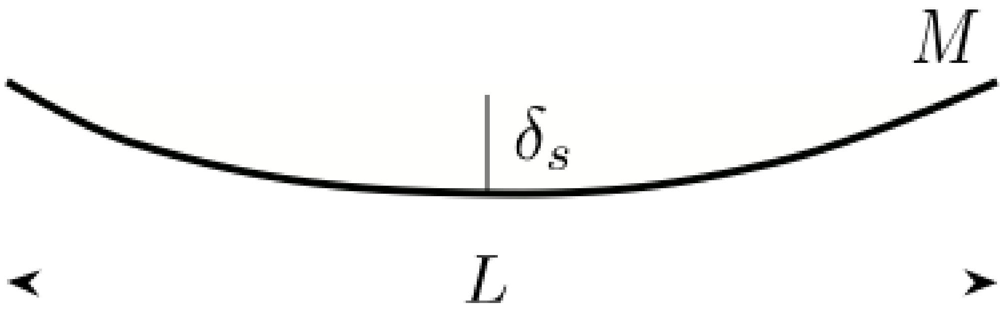
T (s)
10
1
1
10
100
-1/2





10^{-1}
10^{-2}
10^{-3}
10^{-4}
1
3
vibration amplitude/L
load-to-beam mass ratio, m/M

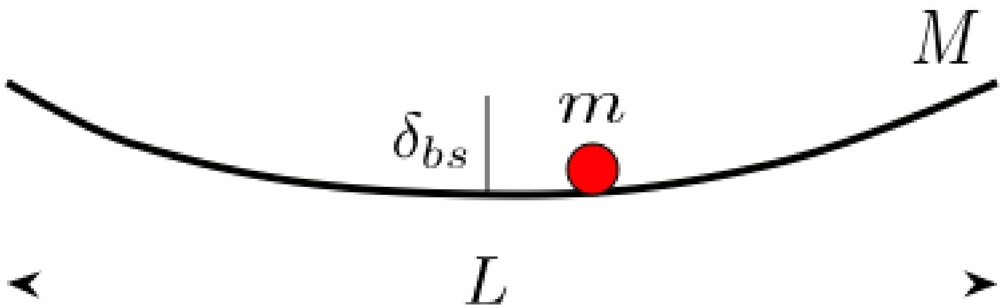
Statique (m=0)



$$Mg\delta_s \sim EI \left(\frac{\delta_s}{L^2}\right)^2 L$$

$$\boxed{\frac{\delta_s}{L} \sim \frac{MgL^2}{EI}}$$

Statique

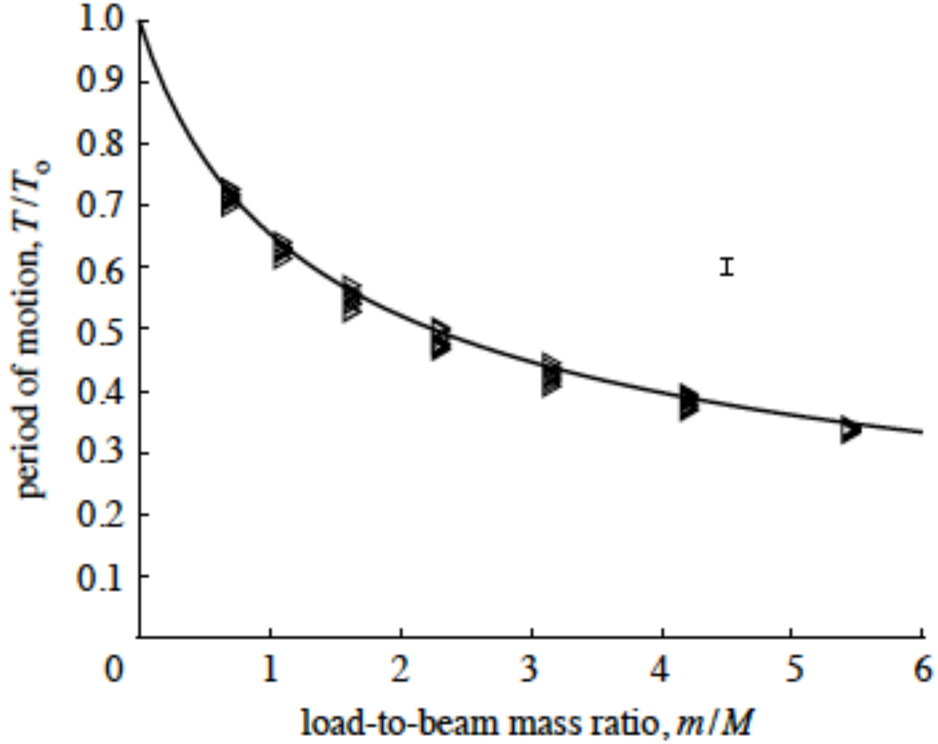


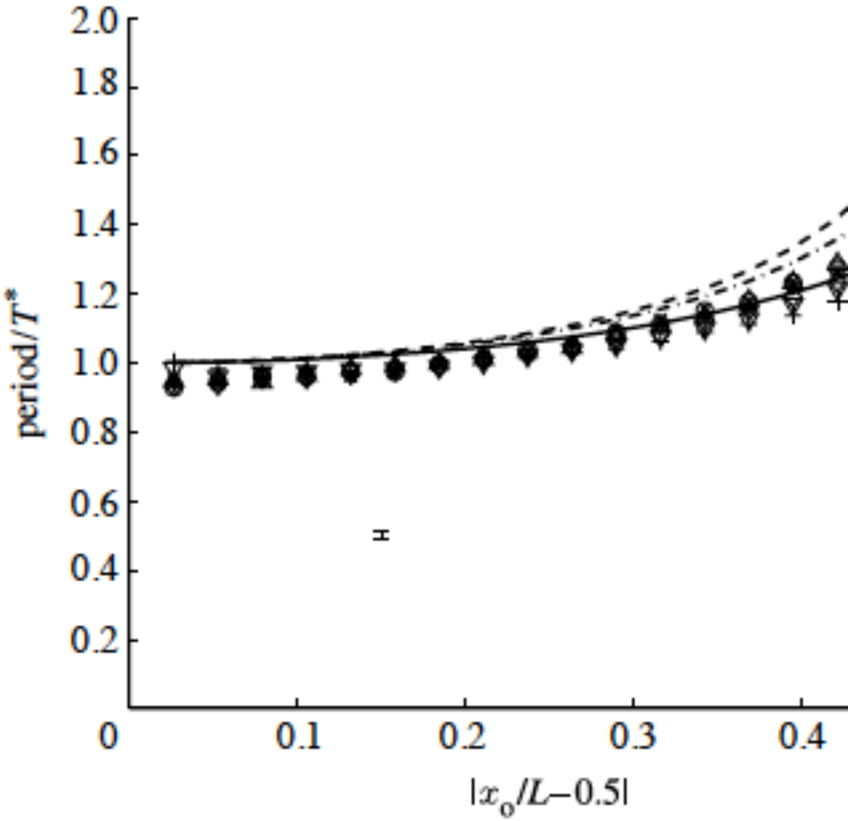
$$\boxed{\frac{\delta_{bs}}{L} \sim \frac{(m+M}{EI}}$$

Dynamique (QS)

$$mU^2 \sim mg\delta_{bs}$$

$$\boxed{T \sim L/U \quad \sim \sqrt{\frac{EI}{(m+M)g^2L}}}$$

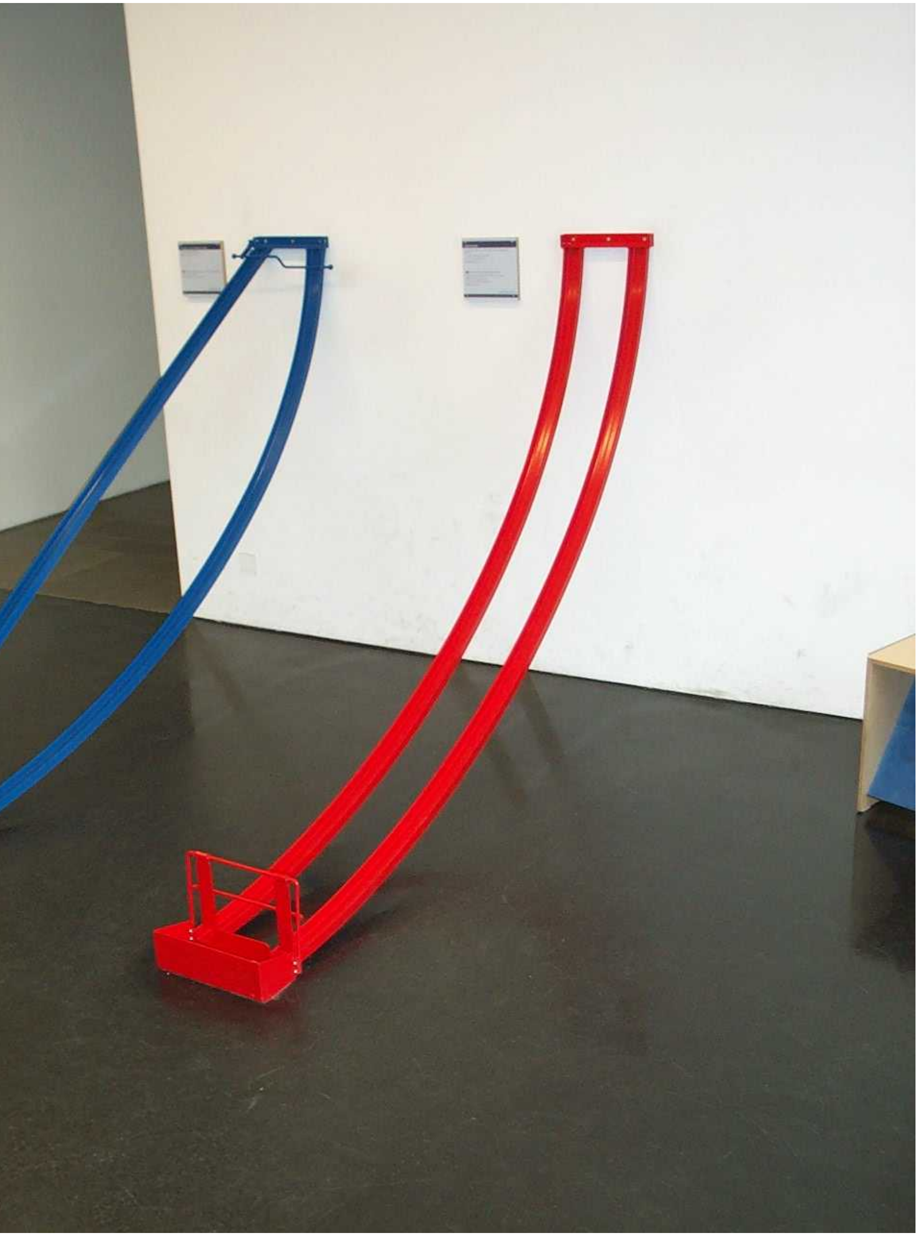




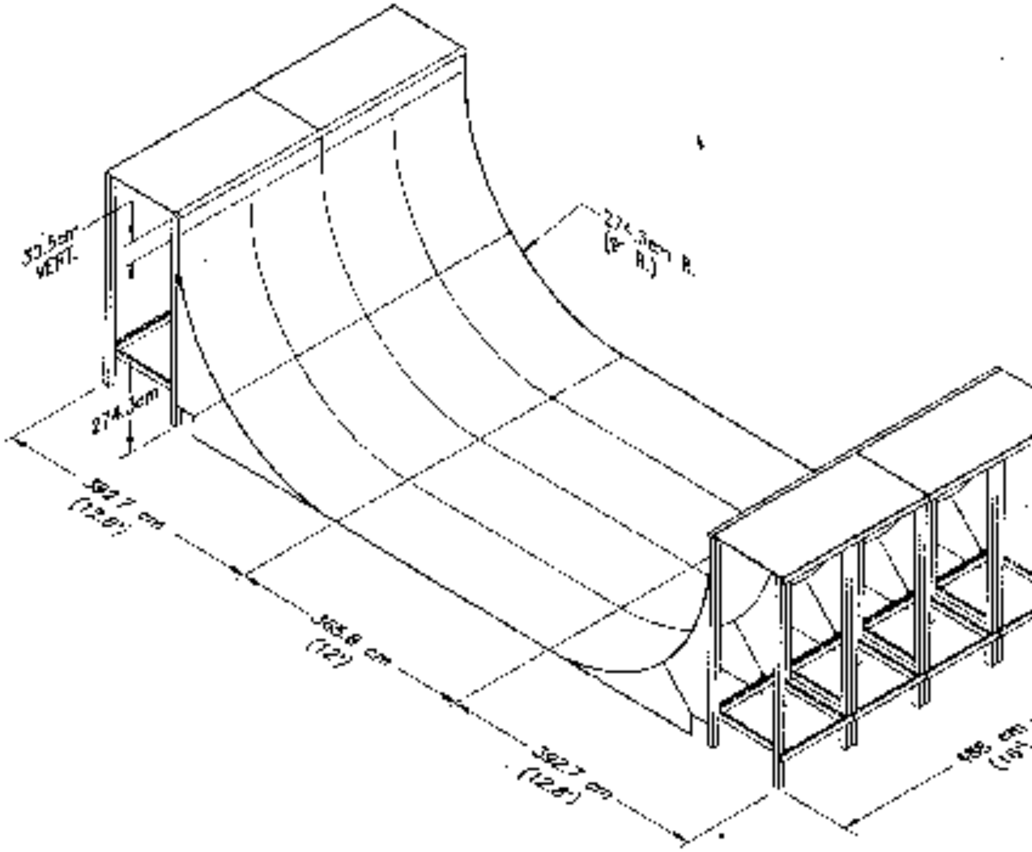
mensionless period of load motion versus load-to-beam mass ratio for loads released near : of an initially horizontal beam, $|x_0/L-0.5|\le 0.25$. The triangles denote the y observed periods. The theoretically predicted period is given by the solid curve and 19). A characteristic error bar is shown. $\mathcal{K}=0.744$, $\theta=0$, $T_0=(4\pi/15)\sqrt{630}\sqrt{EI/Mg^2L}$.

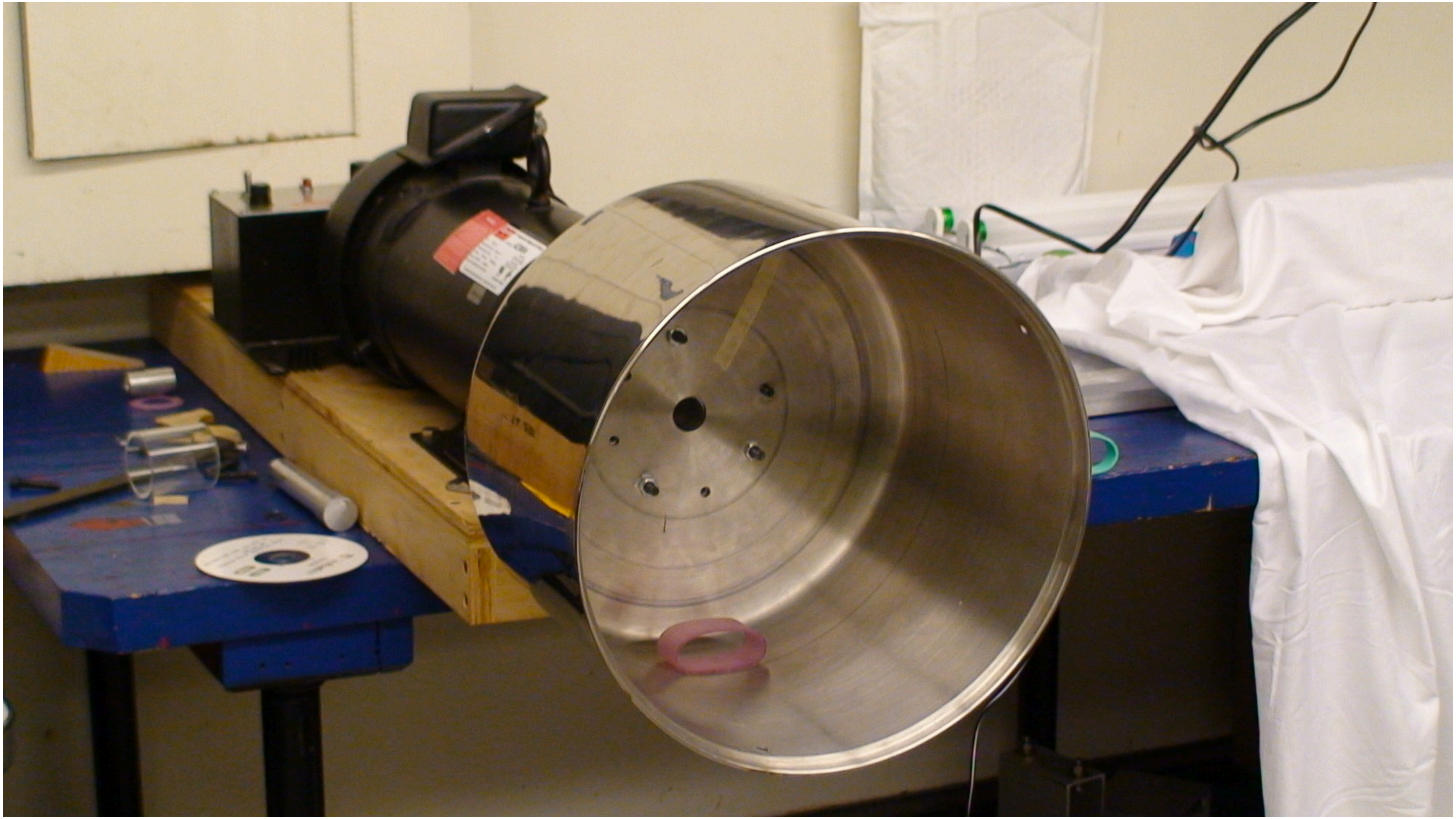
$$T^* = 4\pi\sqrt{2}\sqrt{1+\frac{J}{mR^2}}\sqrt{\frac{EI}{Mg^2L}}\frac{1}{\sqrt{1+\frac{4}{3}\frac{m}{M}}},$$

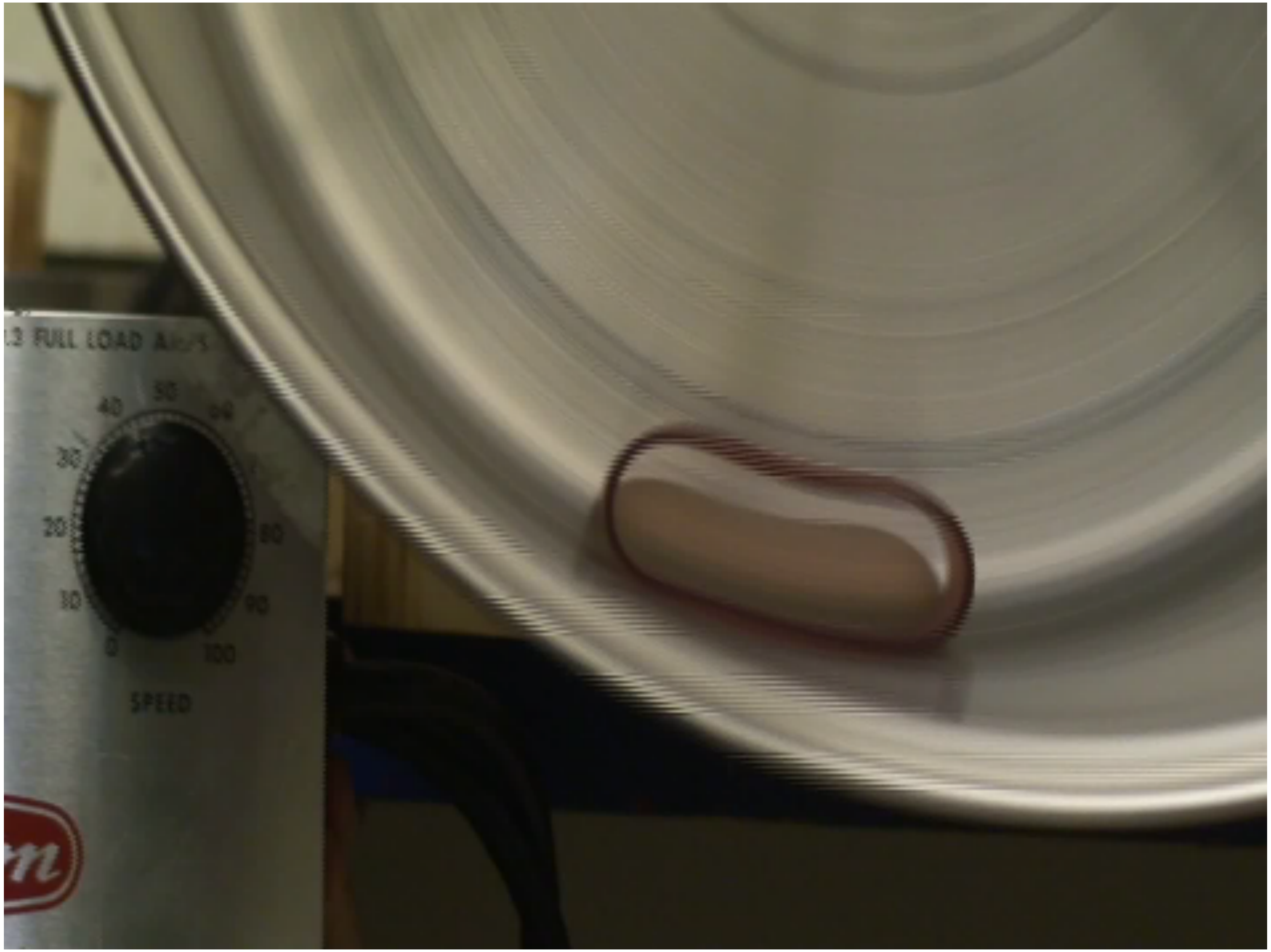
The elastochrone: the descent time of a sp

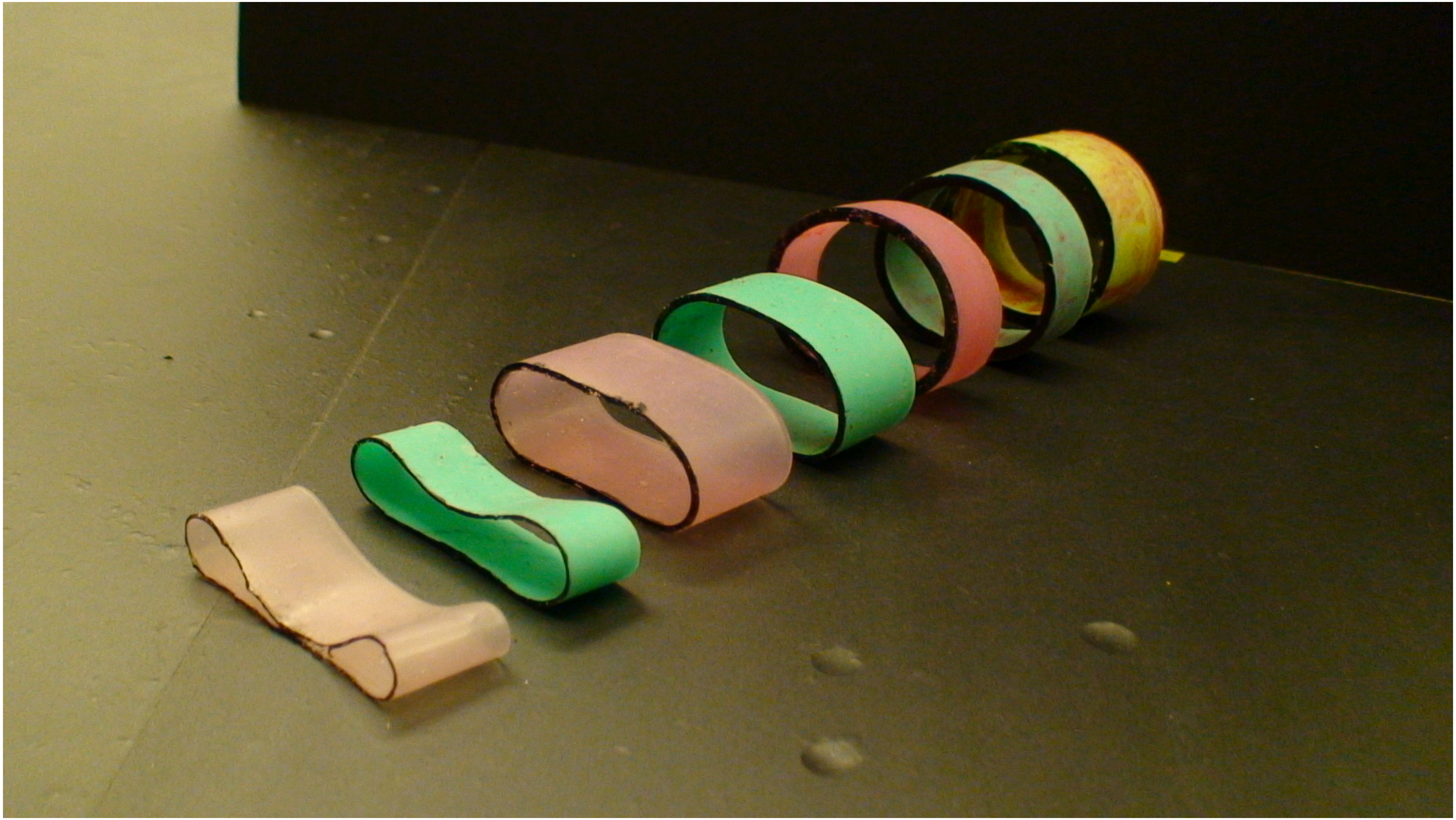



SYVAC
système
d'évacuation
rapide
OTIS

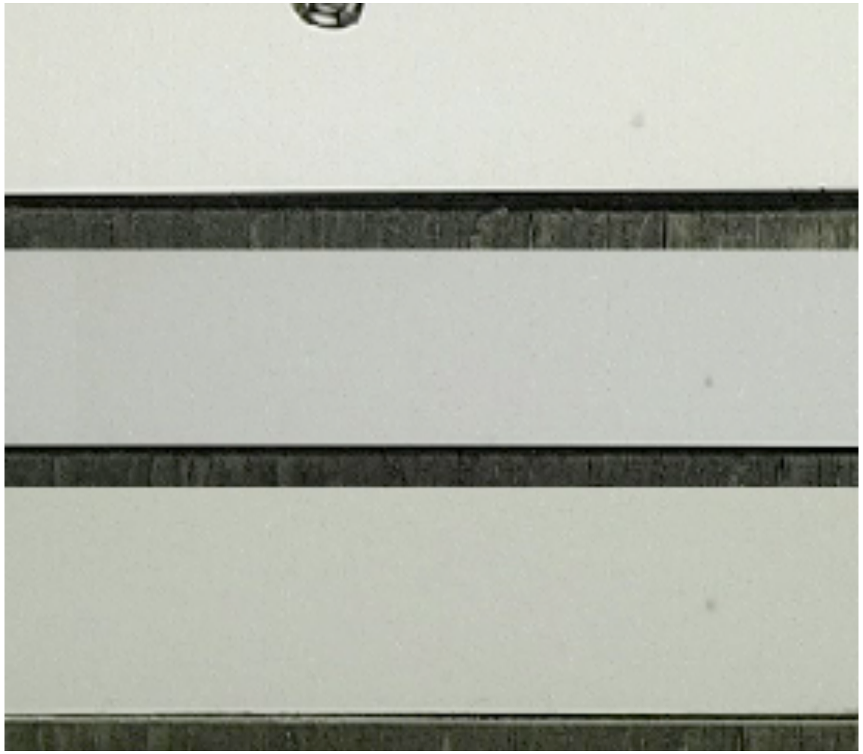

274.3cm
392.7 cm
(12.8')
365.8 cm
(12')
392.7 cm
(12.8')

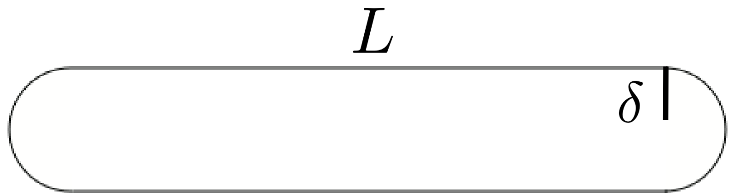



FULL LOAD
SPEED




2K-1





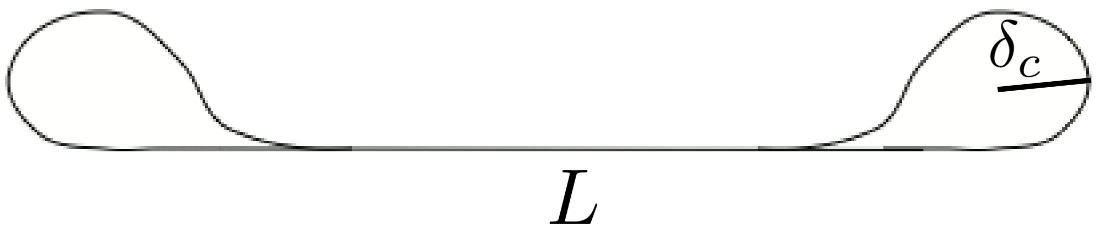
$$\frac{EI}{\delta} \sim \rho_l L g \delta$$

$$\boxed{\mathcal{E} \sim \rho_l L g \delta + EI \frac{1}{\delta^2}\delta \sim \sqrt{L}}$$

$$\frac{\gamma}{\delta} \sim \rho g \delta$$

$$\boxed{\mathcal{E} \sim \rho \Omega g \delta + \gamma L^2 \sim \Omega}$$

$L^2\delta \sim$

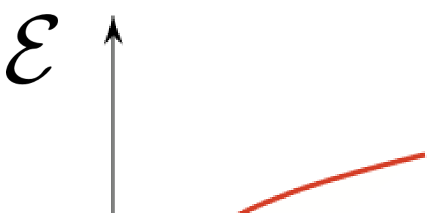


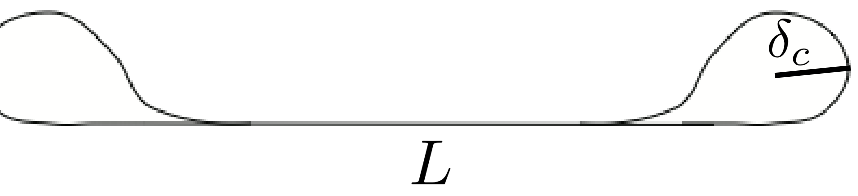
$$\frac{EI}{\delta_c} \sim \rho_l \delta_c g \delta_c$$

$$\boxed{\mathcal{E}_c \sim EI \frac{1}{\delta_c^2}\delta_c}$$

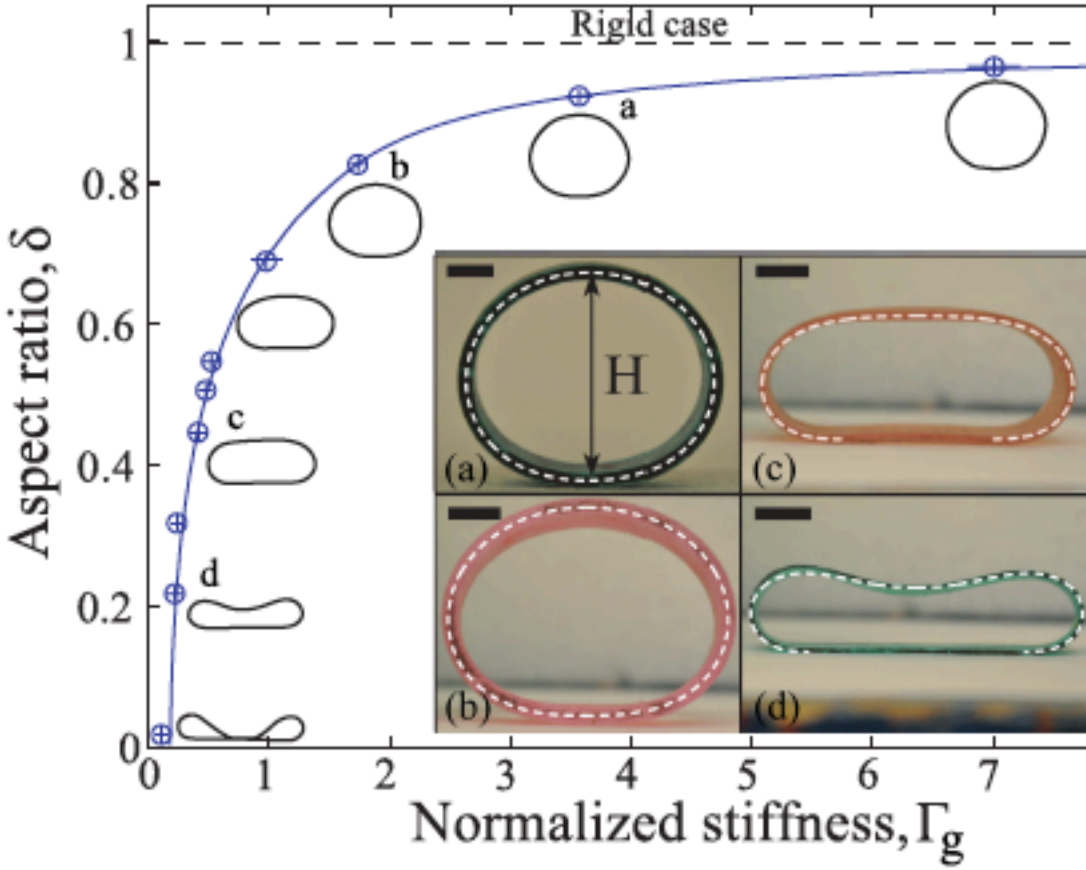
$$\delta^2 L \sim \Omega$$

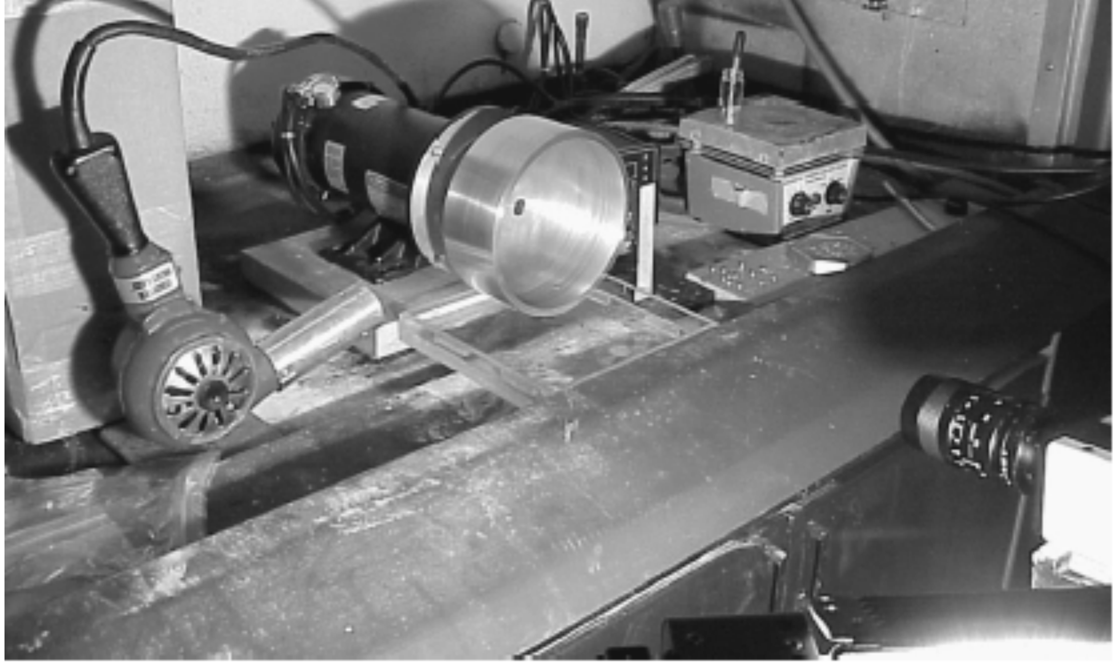
$$\boxed{\mathcal{E}_c \sim \rho \Omega g \delta + \gamma L^2 \sim \Omega^2}$$

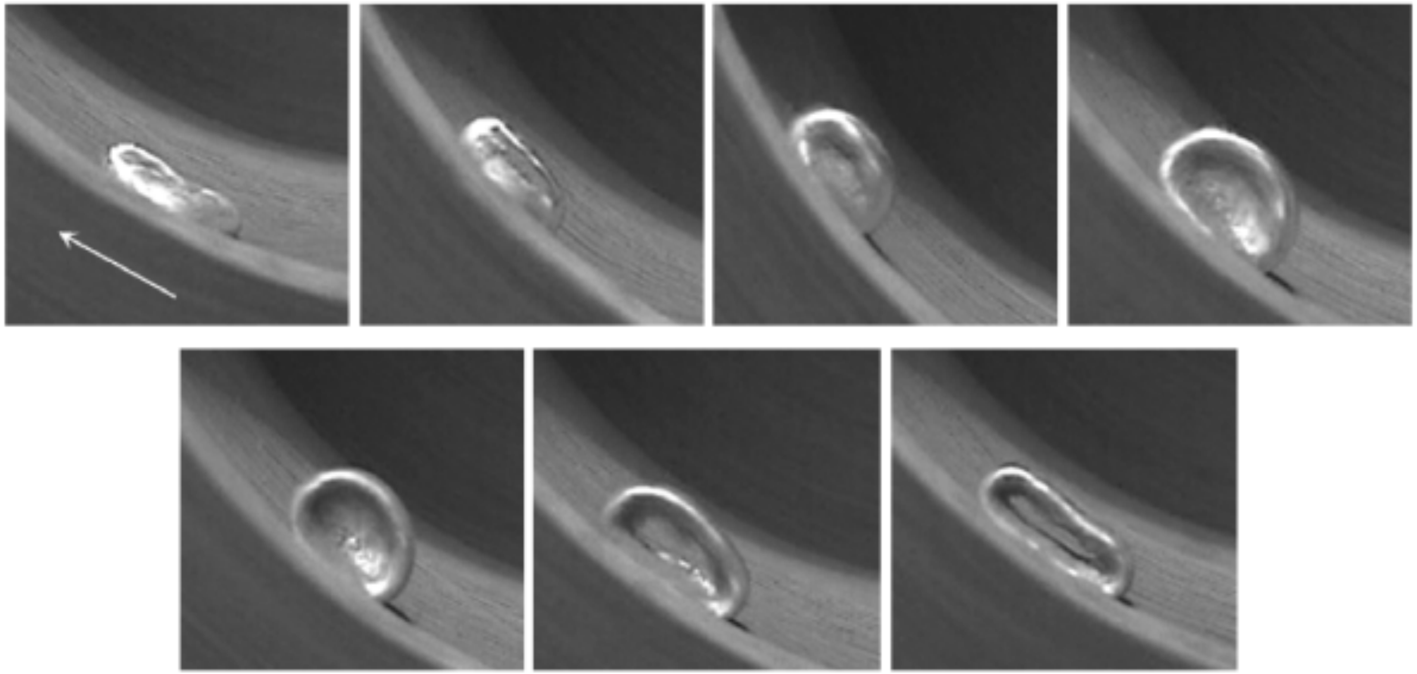


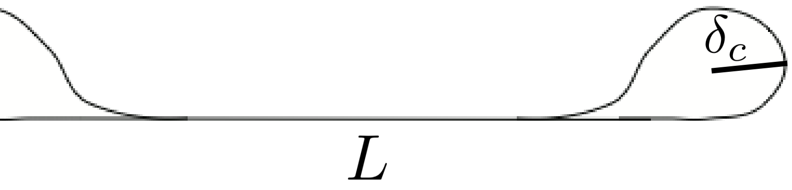


$$\Gamma_g = \left(\frac{\delta_c}{R_0}\right)^3 = \frac{EI}{\rho g S_0 R_0^3}$$





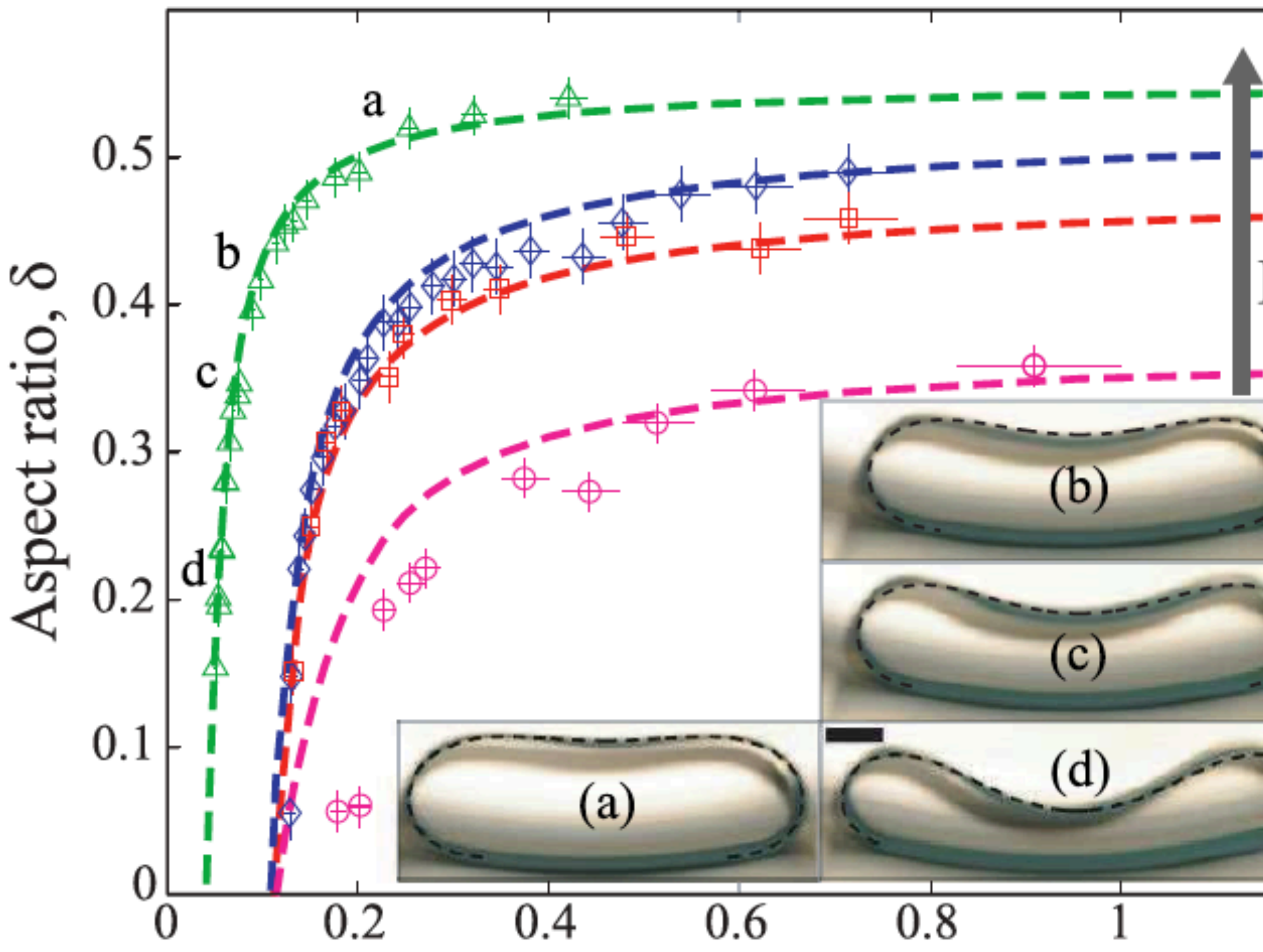




$$\Gamma_g = \left(\frac{\delta_c}{R_0}\right)^3 = \frac{EI}{\rho g S_0 R_0^3}$$

$$g \to U^2/R_0$$

$$\Gamma_i = \frac{EI}{\rho U^2 S_0 R_0^2}$$



$$\Gamma_i = \frac{EI}{\rho U^2 S_0 \ldots}$$