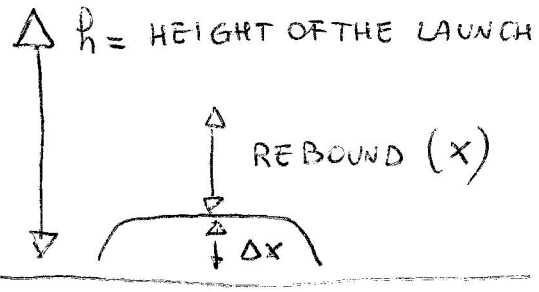
# 18 JULY 2008




$PV = X$

$V_M = h, \vartheta, \omega_M$

$V_C = V_{PS}$ (POWER SUPPLY)

$$G = \frac{PV}{V_C} = \frac{V_M}{V_C}\,\frac{PV}{V_M} = \frac{\omega_M}{V_{PS}}\cdot\frac{\vartheta}{\omega_M}\cdot\frac{h}{\vartheta}\cdot\frac{x}{h}$$

LET'S CONSIDERS WHAT FORCES ARE PRESENT IN THE PROCESS

$$m\ddot{h} = m\ddot{X} + k\Delta x$$

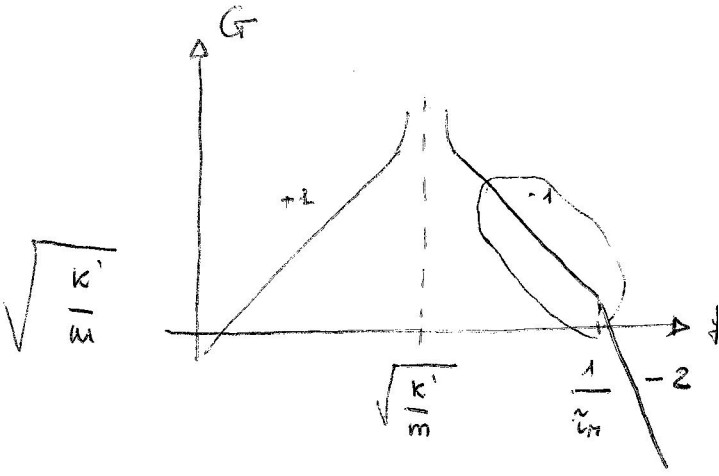
$$m\ddot{h} = m\ddot{X} + k' X$$

$$s^2 m h = s^2 m X + k' X$$

$$\Delta x = k\frac{x}{2}$$

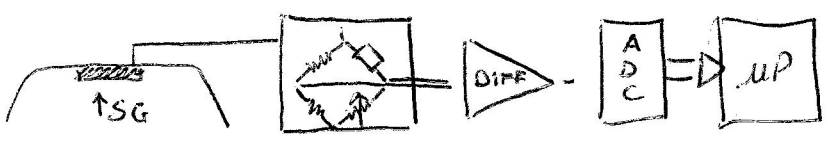
$$\frac{h}{x} = \frac{s^2 m + k'}{m s^2} \qquad \frac{x}{h} = \frac{m s^2}{s^2 m + k'}$$

$$G = \frac{k}{1+s\tau_m}\cdot\frac{1}{s}\cdot k''\cdot\frac{m s^2}{s^2 m + k'}$$




- NOT ASYMPTOTICALLY STABLE
- AVOID TO WORK IN THE AREA AROUND $\sqrt{\frac{k'}{m}}$
- COMPENSATION IN $1/\tau_M$ WITH $\frac{1+s\tau_m}{1+sp}$
- MEASUREMENT:

  - NOT SUITABLE TO MEASURE THE REBOUND X
  - SINCE $X \propto \Delta x$ WE CAN MEASURE THE COMPRESSION WITH A STRAIN GAGE CONNECTED TO A $\mu P$ WITH A WHEATSTONE BRIDG




STRAIN GAGE: slides 61-65 TRANS

BRIDGE: slide 6/7 COND, METH