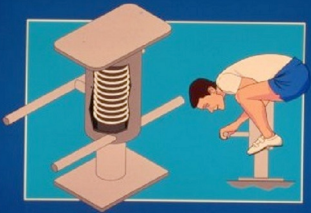
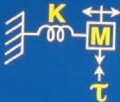


Improved Mass Measurement Devices for Space Flight

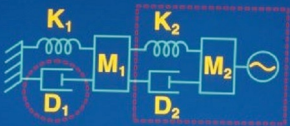
William Thornton, M.D.

Damon Smith, Ph.D.

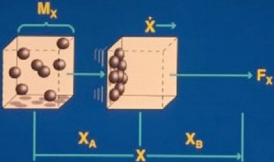


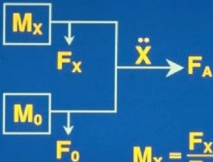


$$\tau = 2\pi\sqrt{\frac{M}{K}}$$

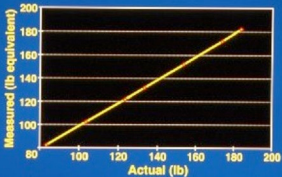


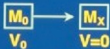
$$\tau = 2\pi \sqrt{M_1/K_1 + f(D_{1,2}, K_2, M_2)}$$





$$M_x = \frac{F_x}{F_0} (M_0)$$



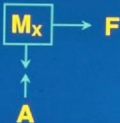


$$M_0 V_0 = (M_0 + M_x) V_x$$

inelastic collision

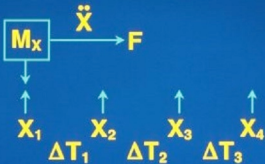


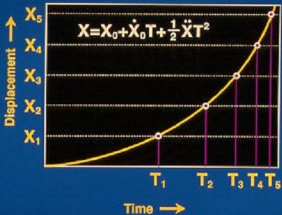
$$M_x = \left(\frac{V_0 - V_x}{V_x} \right)$$



$$F = M_x A$$

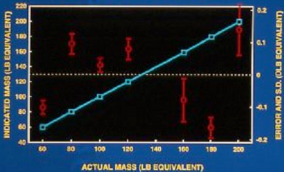
$$M_x = F / A$$



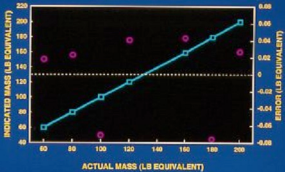


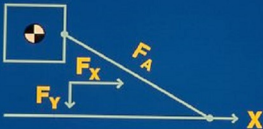
INDICATED vs. ACTUAL MASS

LINEAR CALIBRATION CURVE

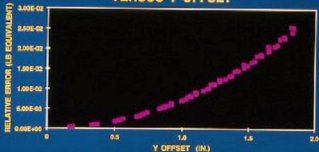


INDICATED vs. ACTUAL MASS THIRD ORDER CALIBRATION CURVE

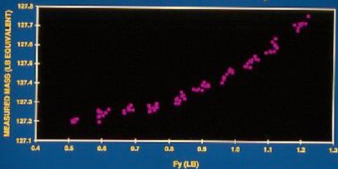




SIMULATED RELATIVE ERROR VERSUS Y OFFSET



MEASURED MASS VERSUS F_y



CORRECTED MASS

