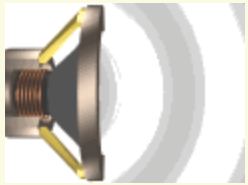
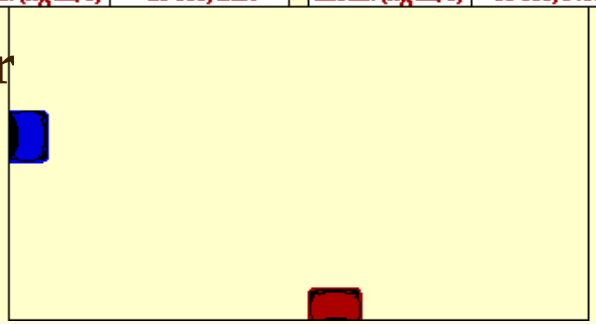


Aula 4: Sistemas de partículas

1. Sistemas com massa variável
2. Centro de massa
3. Lei de conservação do momento linear
4 .Troca de quantidade de movimento

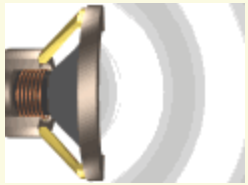
Blue Car	
mass (kg)	1000
vel. (m/s)	20.0, East
mom. (kg m/s)	20 000, East

Red Car	
mass (kg)	1000
vel. (m/s)	10.0, North
mom. (kg m/s)	10 000, North

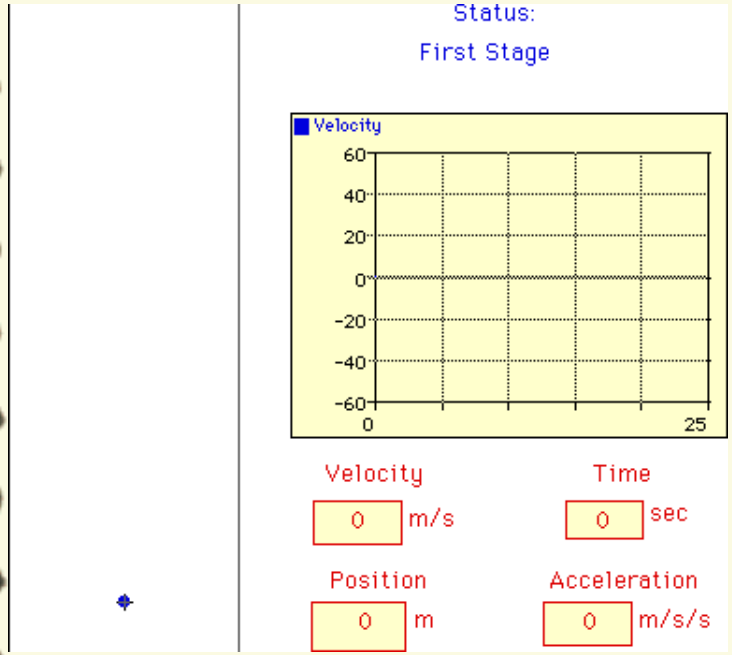


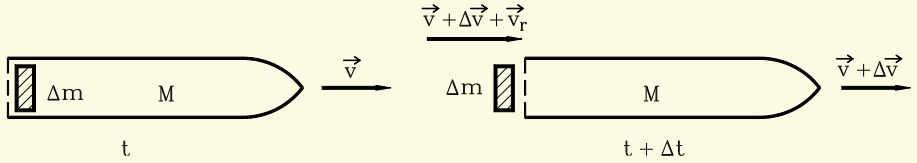
Simulação: princípio do foguetão

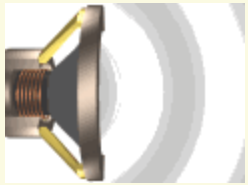
Simulação: movimento vertical do foguetão



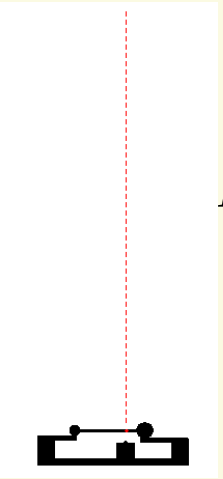
1. Sistemas com massa variável



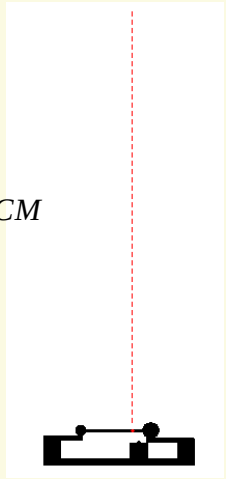




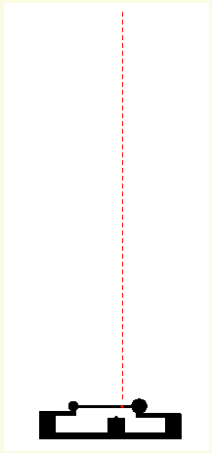
2. Centro de massa



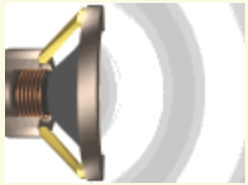
$$\vec{P} = M \frac{\sum_k m_k \vec{v}_k}{\sum_k m_k} = M\vec{v}_{CM}$$



$$\vec{R}_{CM} = \frac{\sum_k m_k \vec{r}_k}{\sum_k m_k}$$

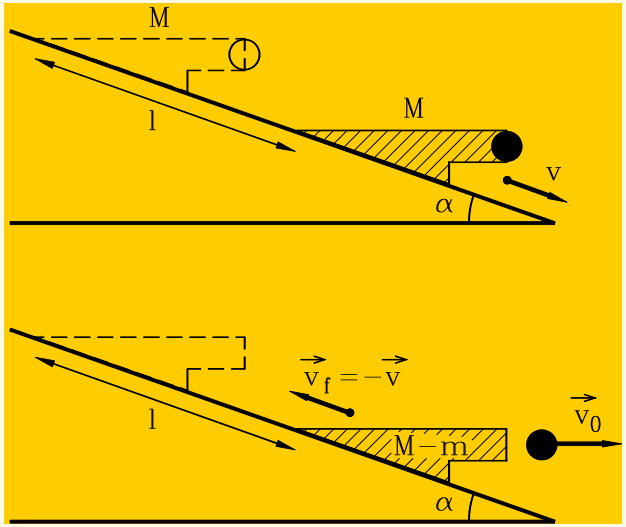


Simulação do pêndulo balístico



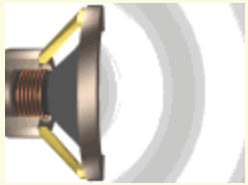
3. Conservação do momento linear

$$\sum m_f \vec{v}_f = \sum m_i \vec{v}_i$$



Simulação: troca de quantidade de movimento

Simulação de uma colisão 2D



4. Troca de quantidade de movimento