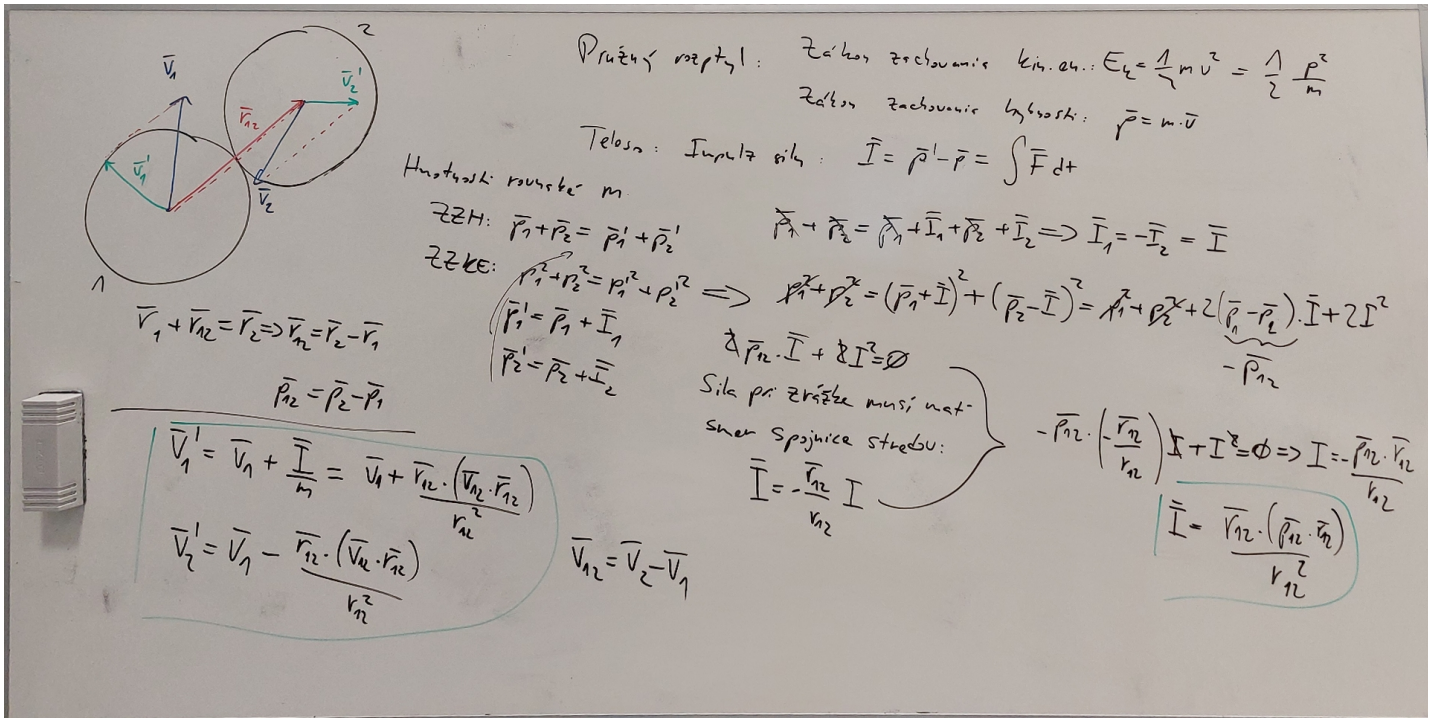
Pružný rozptyl:
Zákon zachovania kin. en.: $E_k = \frac{1}{2} m v^2 = \frac{1}{2} \frac{p^2}{m}$
Zákon zachovania hybnosti: $\bar{p} = m \cdot \bar{v}$
Teleso: Impulz sily: $\bar{I} = \bar{p}' - \bar{p} = \int \bar{F}\, dt$
Hmotnosti rovnaké m
ZZH: $\bar{p}_1 + \bar{p}_2 = \bar{p}_1' + \bar{p}_2'$
ZZKE: $p_1^2 + p_2^2 = p_1'^2 + p_2'^2$
$\bar{p}_1' = \bar{p}_1 + \bar{I}_1$
$\bar{p}_2' = \bar{p}_2 + \bar{I}_2$
$\bar{p}_1 + \bar{p}_2 = \bar{p}_1 + \bar{I}_1 + \bar{p}_2 + \bar{I}_2 \Rightarrow \bar{I}_1 = -\bar{I}_2 = \bar{I}$
$p_1^2 + p_2^2 = (\bar{p}_1 + \bar{I})^2 + (\bar{p}_2 - \bar{I})^2 = p_1^2 + p_2^2 + 2(\bar{p}_1 - \bar{p}_2)\cdot\bar{I} + 2I^2$
$-\bar{p}_{12}$
$2\bar{p}_{12}\cdot\bar{I} + 2I^2 = 0$
Sila pri zrážke musí mať smer spojnice stredov:
$\bar{I} = -\frac{\bar{r}_{12}}{r_{12}} I$
$-\bar{p}_{12}\cdot\left(-\frac{\bar{r}_{12}}{r_{12}}\right) I + I^2 = 0 \Rightarrow I = -\frac{\bar{p}_{12}\cdot\bar{r}_{12}}{r_{12}}$
$\bar{I} = -\frac{\bar{r}_{12}\cdot(\bar{p}_{12}\cdot\bar{r}_{12})}{r_{12}^2}$
$\bar{r}_1 + \bar{r}_{12} = \bar{r}_2 \Rightarrow \bar{r}_{12} = \bar{r}_2 - \bar{r}_1$
$\bar{p}_{12} = \bar{p}_2 - \bar{p}_1$
$\bar{V}_1' = \bar{V}_1 + \frac{\bar{I}}{m} = \bar{V}_1 + \frac{\bar{r}_{12}\cdot(\bar{V}_{12}\cdot\bar{r}_{12})}{r_{12}^2}$
$\bar{V}_2' = \bar{V}_1 - \frac{\bar{r}_{12}\cdot(\bar{V}_{12}\cdot\bar{r}_{12})}{r_{12}^2}$
$\bar{V}_{12} = \bar{V}_2 - \bar{V}_1$
1
2
$\bar{V}_1$
$\bar{V}_2'$
$\bar{r}_{12}$
$\bar{V}_1'$
$\bar{V}_2$