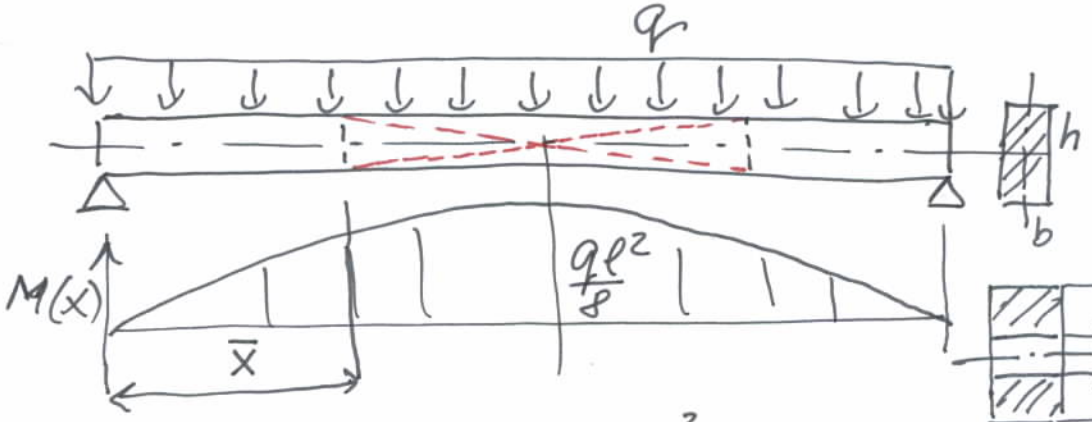
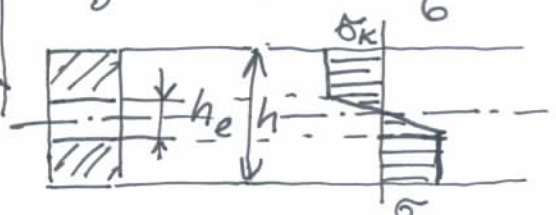


$M_{pl} = \sigma_K \cdot \frac{bh^2}{4}$

$M_1 = \sigma_K \frac{bh^2}{6}$



Mezní zatížení: $\frac{q_M l^2}{8} = M_{pl}$

$M_{e-p} = \frac{\sigma_K b h_e^2}{6} + \frac{\sigma_K b (h^2 - h_e^2)}{4}$

Počátek plastické oblasti

$M(\bar{x}) = M_1 \qquad M(\bar{x}) = \frac{q_M l}{2} \cdot \bar{x} - \frac{q_M \bar{x}^2}{2}$

$\frac{q_M}{2}(l\bar{x} - \bar{x}^2) = \sigma_K \cdot \frac{bh^2}{6}$

$\frac{8 M_{pl}}{l^2}(l\bar{x} - \bar{x}^2) = \sigma_K \frac{bh^2}{6} \Rightarrow 2\frac{\sigma_K b h^2}{l^2}(l\bar{x} - \bar{x}^2) = \sigma_K \frac{bh^2}{6}$

$2\left(\frac{\bar{x}}{l} - \left(\frac{\bar{x}}{l}\right)^2\right) = \frac{1}{3} \Rightarrow \frac{\bar{x}}{l} = 0{,}2113$

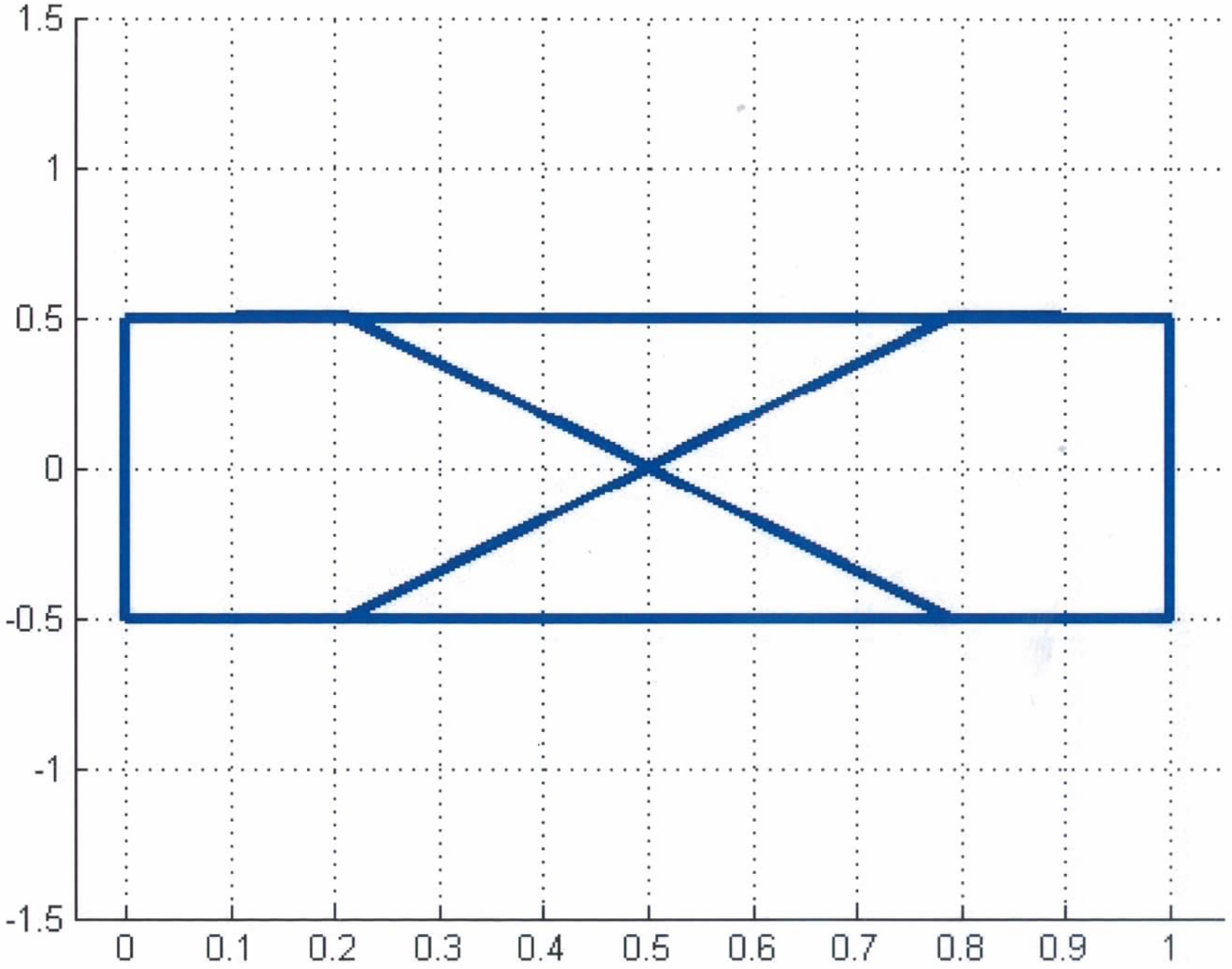
Plastická oblast je mezi $0{,}2113\,l$ a $0{,}7887\,l$

Tvar plast oblasti $h_e(x)$ $0{,}2113 \le \frac{x}{l} \le 0{,}5$

$\frac{q_M}{2} l^2 \left(\frac{x}{l} - \left(\frac{x}{l}\right)^2\right) = \frac{\sigma_K b h_e^2}{6} + \frac{\sigma_K b}{4}(h^2 - h_e^2)$

$\left(\frac{h_e}{h}\right)^2 = 3 - 12\left(\frac{x}{l} - \left(\frac{x}{l}\right)^2\right)$

$\frac{h_e}{h} = \sqrt{12}\left(\frac{x}{l} - \frac{1}{2}\right)$ přímka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0.5
0
-0.5
-1
-1.5
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1