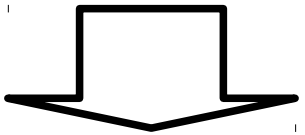
弾塑性モデルを用いた簡易接触解析

7511746　藤村政大

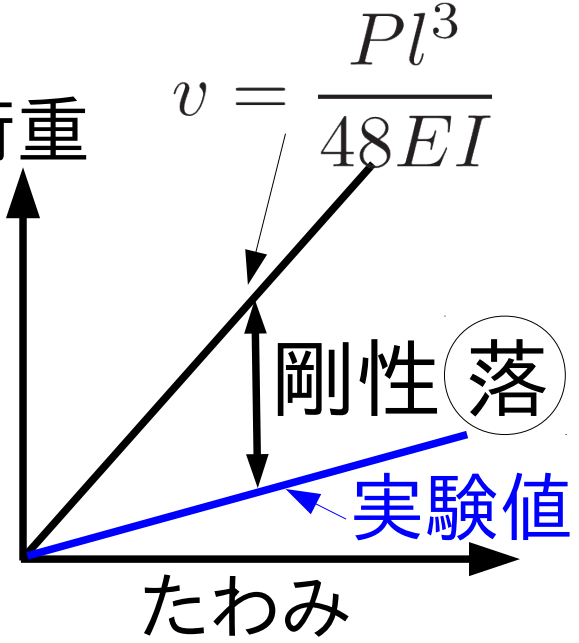
・環境負荷小

・施工が簡単

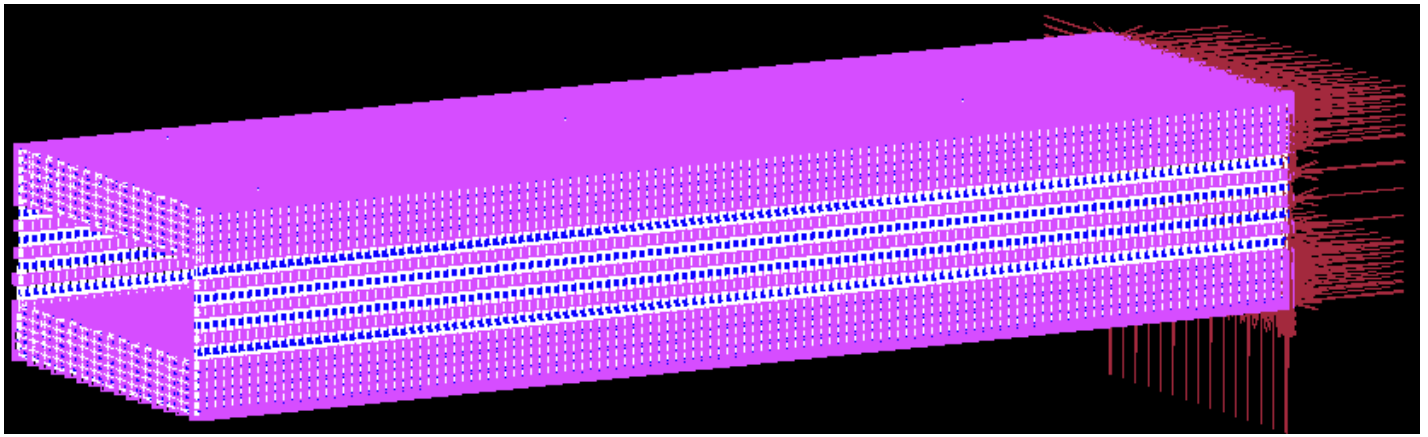
・応急橋として利用

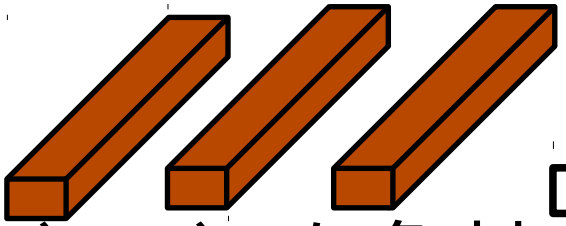


せん断変形が大きい

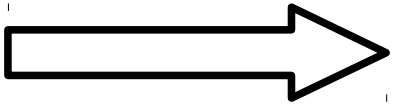


FEMで
モデル化



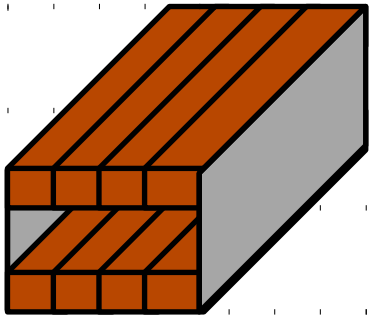


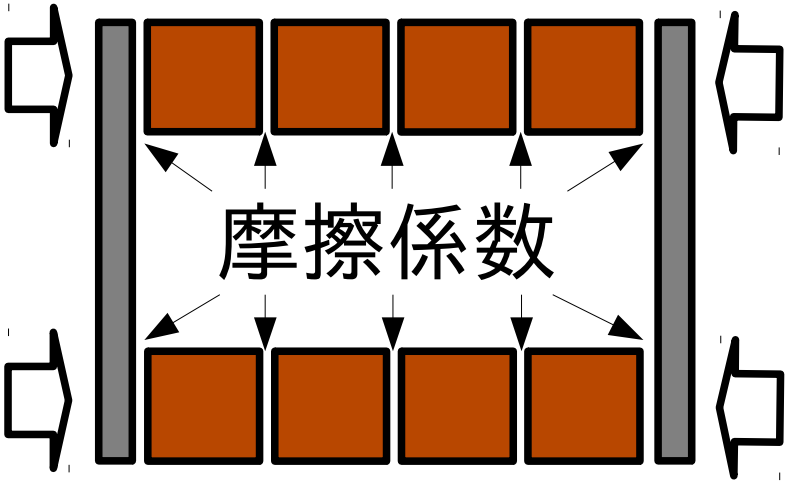
バラバラな角材

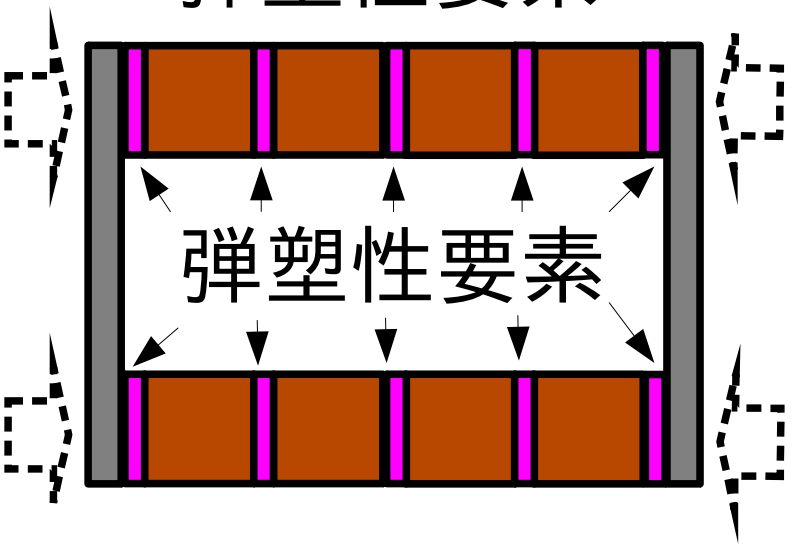


接触解析が必要・・・

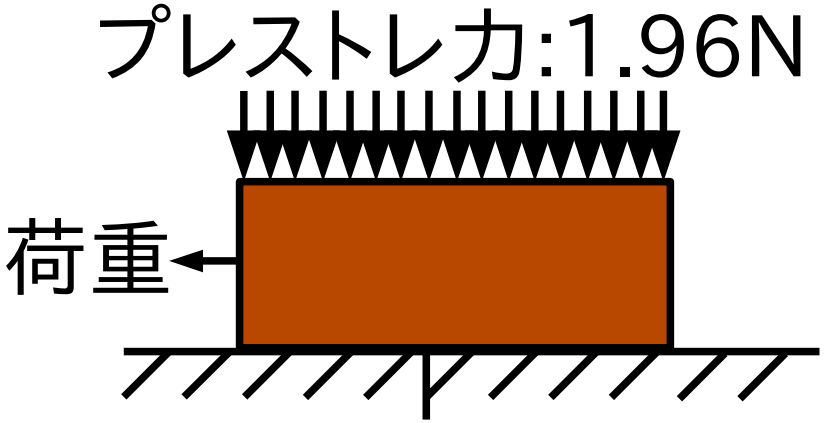
接触解析



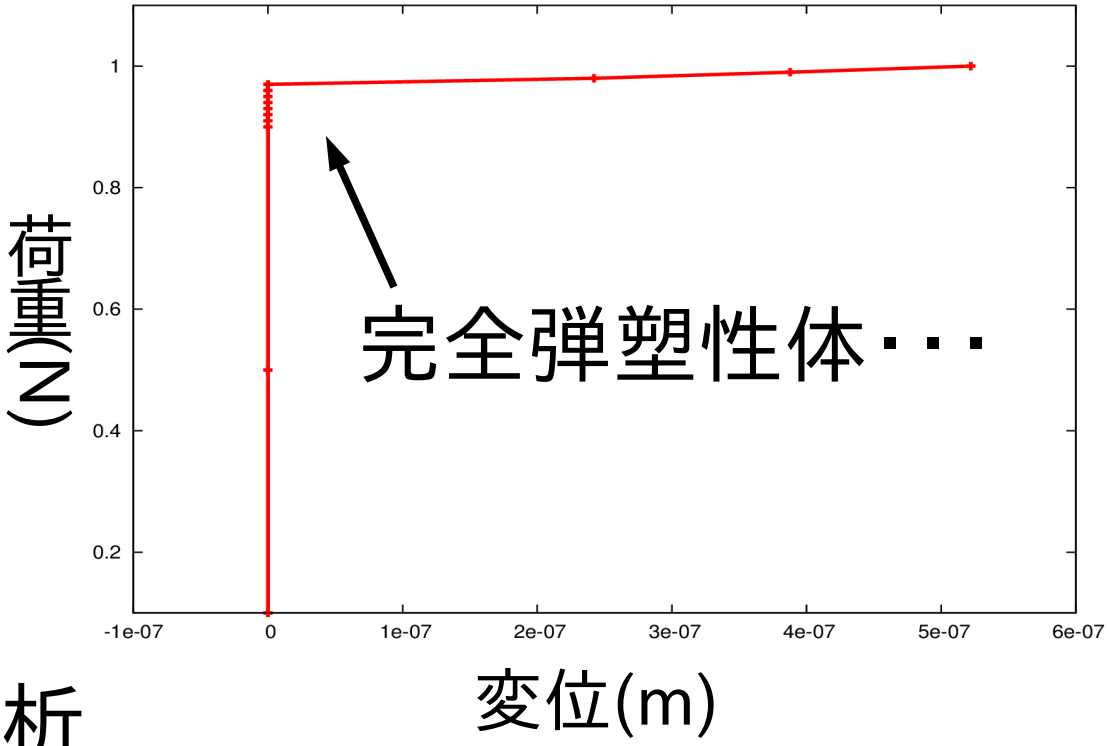




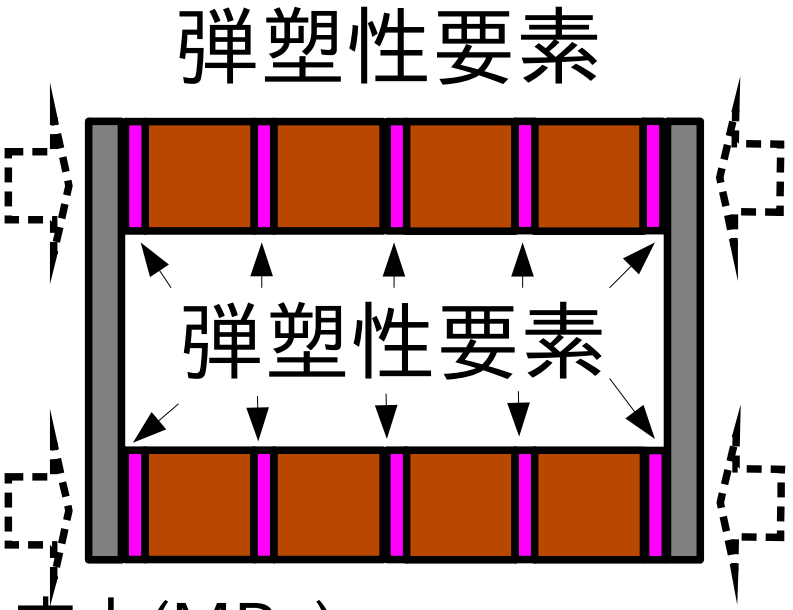
JISに基づいた摩擦試験

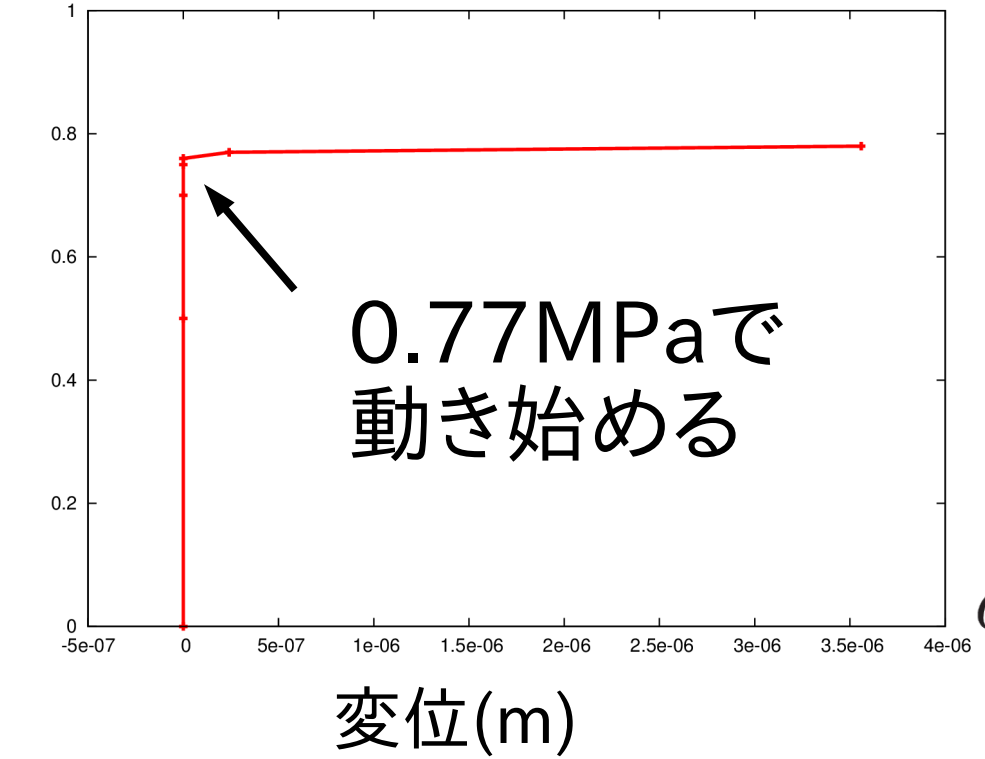


MSC Marc Mentatで解析

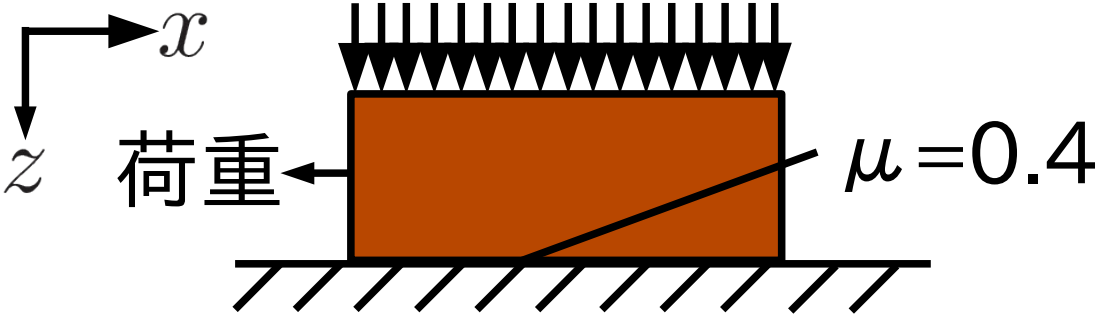


挟む材料の検討





プレストレス力:0.972MPa



プレストレス無視

卓越する応力: σ_{zx}

$$\sigma_{Mises} = \sqrt{3}\sigma_{zx}$$

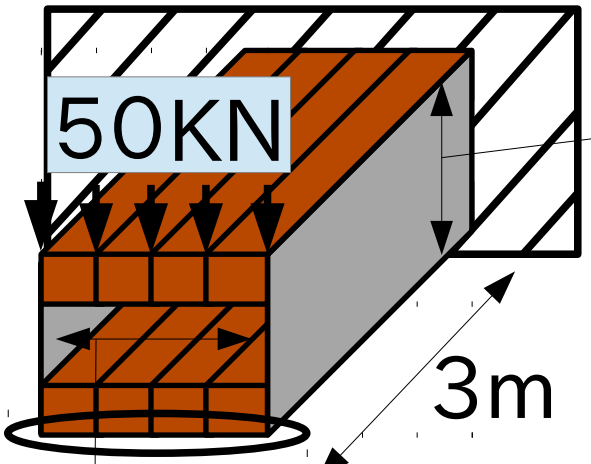
プレストレス考慮

卓越する応力: σ_{zx}, σ_{zz}

※ $\sigma_{zz} = \sigma_{PC}$

$$\sigma_{Mises} = \sqrt{\frac{3}{2}(\sigma_{zz}^2 + 2\sigma_{zx}^2)}$$

弾塑性要素を挟んだ場合

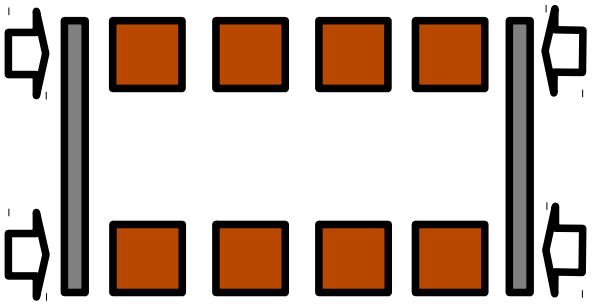


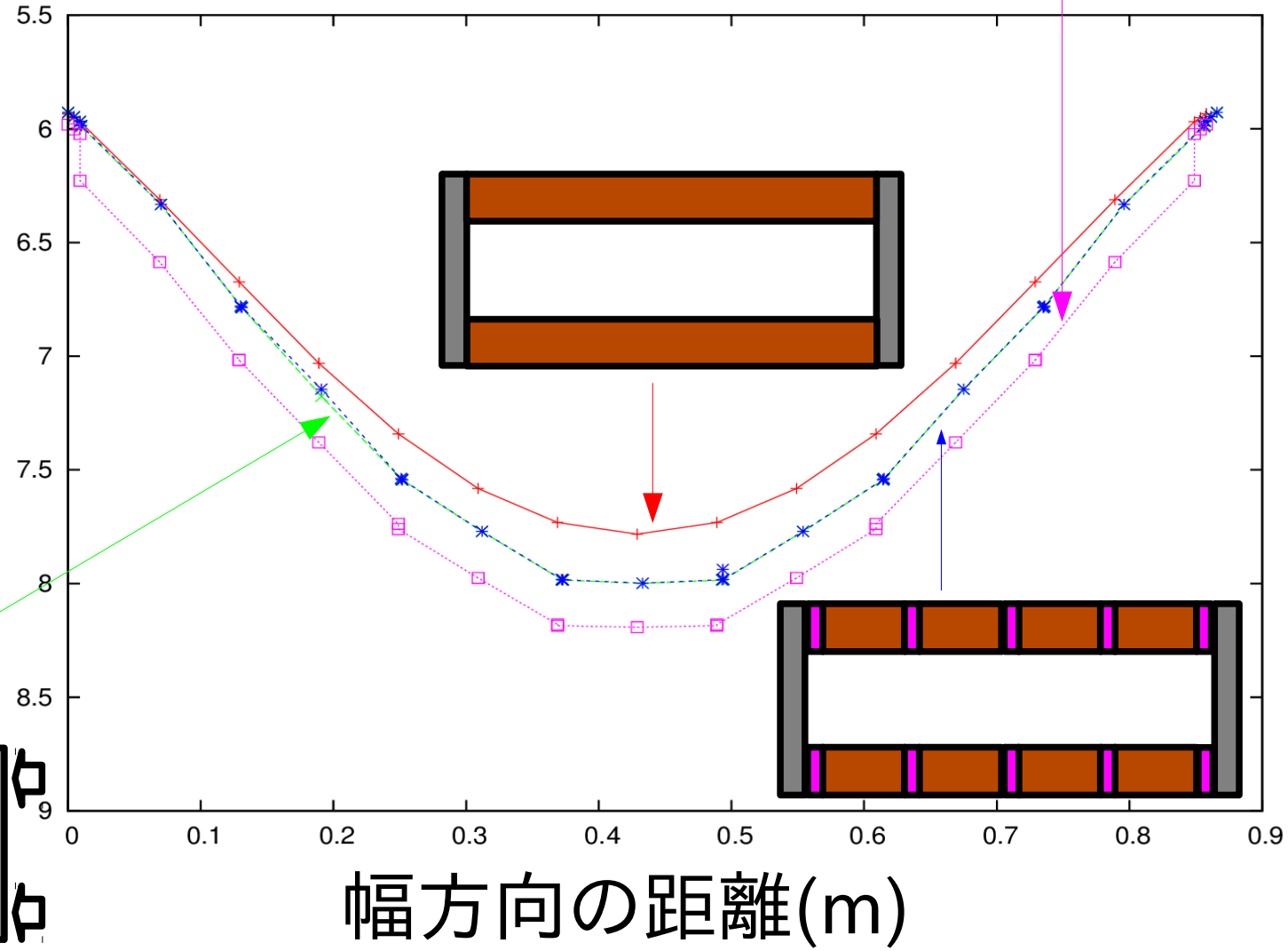
50cm

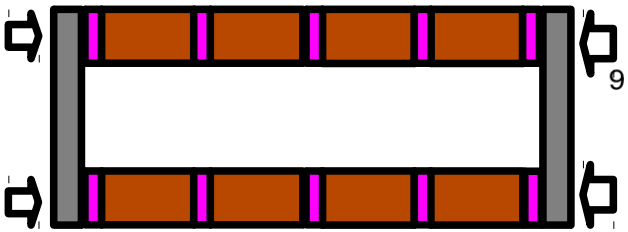
3m

変位を解析

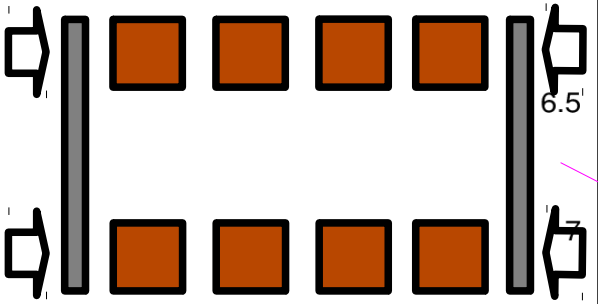
85.8cm



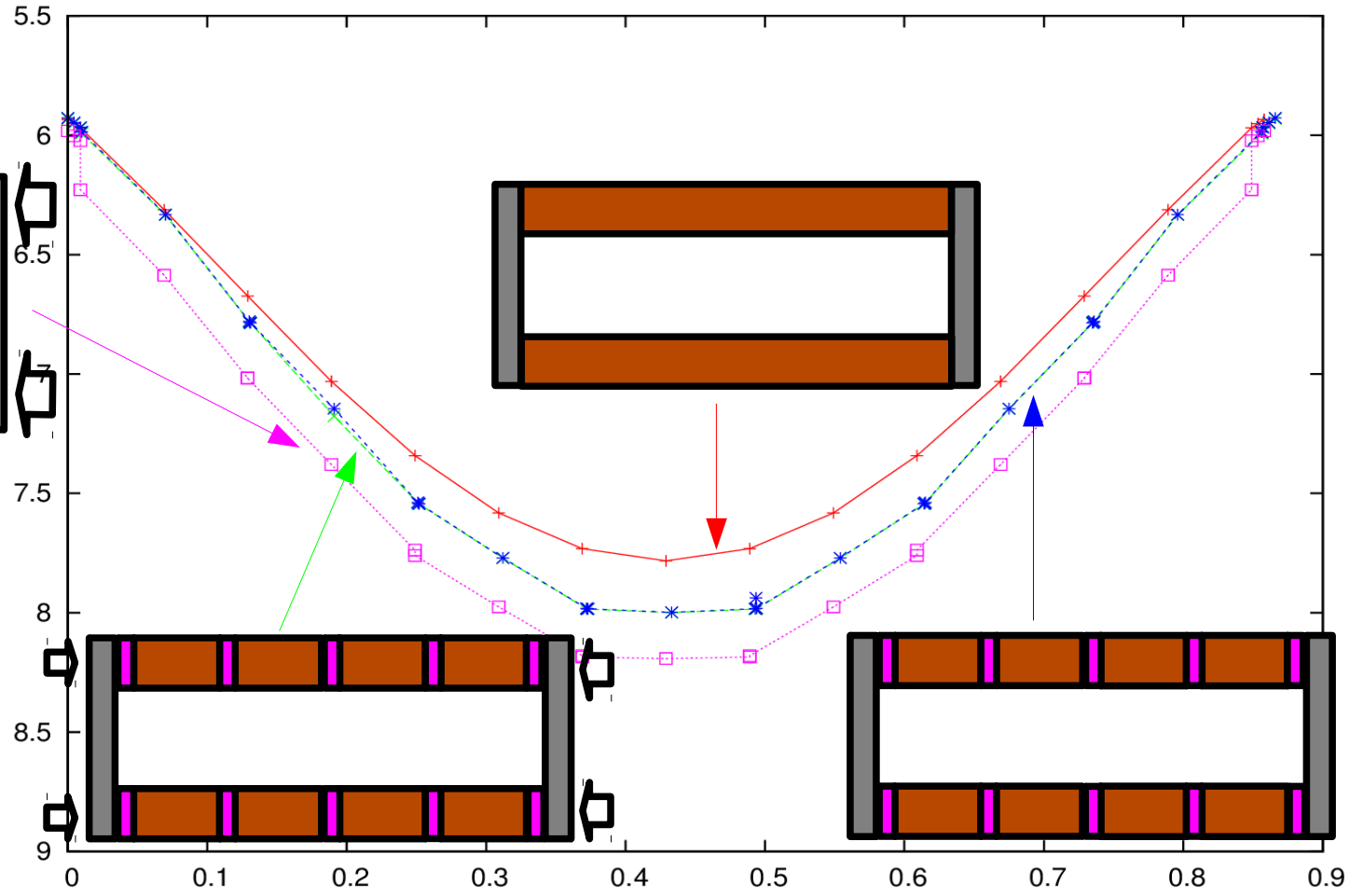




まとめ



変位(mm)



幅方向の距離(m)

- 挟む材料の検討
- 降伏点の見直し
- 他の解析ツールでも解析可能か・・・