POLITECHNIKA KRAKOWSKA im. Tadeusza Kościuszki
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Instytut Technologii Informatycznych w Inżynierii Lądowej (L-5)

Computational Methods | group gK02 | summer 2017/2018

REQUIREMENTS FOR ASSIGNMENT REPORTS

Reports for all Assignments should be neat and prepared by hand. Please, be aware that when you deliver your project I will check the results in programmes which were used for solution, so please bring proper files (on pendrive or on your own laptop) and be able to show me your computations.

Report for Assignment 4 (analysis of panel in plane stress) should contain:

1. Drawing presenting your task
2. Information about two discretizations implemented in Robot (type of the finite elements, number of elements, number of nodes, number of degrees of freedom)
3. Sketch of the deformed specimen (for the given load without self-weight). Consider whether the solution is correct.
4. Sketch of the diagram of the dependence of one stress tensor component (σ_{xx} or σ_{yy}) on the coordinate along a selected cross-section (horizontal or vertical) obtained for the fine mesh. Example below (this is only a sketch, not a real solution)
5. Analysis of mesh dependence: Choose one point inside the panel or on the boundary (but not on fixed one, obviously) and read displacement vector components at this point for the coarse and the fine mesh. Write down the obtained vectors $\mathbf{u}^{coarse}$ and $\mathbf{u}^{fine}$. Compute the difference between them, the norm of the difference
$$|| \mathbf{u}^{fine} - \mathbf{u}^{coarse} ||$$
and the relative error (it can be expressed in percent)
$$|| \mathbf{u}^{fine} - \mathbf{u}^{coarse} || / || \mathbf{u}^{fine} ||$$
Repeat this procedure for stress tensor (read the components, write down two tensors $\boldsymbol{\sigma}^{coarse}$ and $\boldsymbol{\sigma}^{fine}$ (2x2), calculate their difference, the norm of the difference, and the relative error). Comment the results.