

Static structural analysis using an existing hexahedral mesh – Stent expansion

Assuming that the hexahedral mesh of the stent is generated using an alternative meshing tool, the purpose of this example¹ is to demonstrate usage of the dfemtoolz for applying BCs to an existing hexahedral mesh. Briefly, we assume that one needs to simulate expansion-deployment of the stent by applying the uniform pressure to the stents' inner surfaces.

Algorithm

Input:

List of nodes and hexahedral elements that define the stent mesh (in the .sli format).

Input:

List of the stent mesh faces (quadrilaterals) where pressure should be applied (in the facet list - .fal plain text format).

Output:

.sli (simple list) file, which contains the generated model (list of nodes and elements) and BCs (for each node and the list of faces where pressure is prescribed); and posfiles of user preference for visualisation (surface with applied pressure, elements, nodes...).

1

Call the dfemtoolz_nolimit module to recognize outer surface of the given model.

2

for i=1 to to number of .fal files (1) that contains surfaces on which loads should be applied do

3

Set a type of load (force, pressure) for the i-th load surface.
(this was done, and .cfg files are configured in input/ directory)

4

Call the dfemtoolz_openR module to prescribe the given BCs to the model.

5

end for

In output/ directory user can find the results. Output files can be different if user modify settings in .cfg files.

Final results are zipped in output/

Thank you for your interest

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