

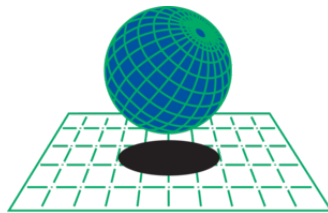
UNIVERSITAT POLYTECHNICA DE CATALUNYA
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Assignment 9

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CIMNE[®]



1 Application of a Non-Symmetric Load

One way to apply a non symmetric load within the framework of this formulation is to decompose it using fourier decomposition techniques. By decomposing the non-symmetric load along the appropriate direction of the axi-symmetric solid, we are able to calculate the response for each harmonic term then superimpose the results. However, it is important to note that this method works only with linear problems and will produce displacement fields made up of harmonic terms.

2 Integration using Thin Beams Formulation

The chosen integration rule for a axi-symmetric revolution is very important, especially when one of the element nodes lies on the axis of revolution its-self. If integration is attempted using one of these points as an integration point, the solution will be corrupted. A more appropriate solution will be therefore to use Gaussian integration where the integration points lie within the element. This will eliminate the problem of dealing with zero within the integration over the element. The solution accuracy may suffer accordingly however depending on the problem parameters.