Chapter C. Static non-linear calculations

Chapter C. Nonlinear Static calculations

Nonlinear calculations are generally time-demanding: a finite element software solves a nonlinear problem as a series of linear problems (incremental process). To prepare this type of calculation the user has to make decisions such as defining the increments, choosing the algorithm, etc. Therefore, the process requires a certain amount of experience from the user.

Most of the nonlinear computational models can, in principle, run until one or multiple conditions are satisfied, or in the case of contact problems, until a specified minimum number of connections (or supports) disappear. Therefore, before starting a nonlinear calculation, it is important to make a preliminary estimation, which will enable us to know when to stop the calculations.

C.1 Nonlinear mechanical problems

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C.2 Why performing nonlinear calculations?

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C.3 Implementation

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C.4 Convergence problems? Symptoms and solutions

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