Work Package 1 (Week 10-02-2014)

This work package has 2 different tasks. First of these is an introduction into Abaqus CAE by means of several examples from the Abaqus manuals. The second task is a problem commonly used as a benchmark to test shell elements.

During or after the practical session the results obtained should be reported on **at most 1 page** with name and student number and submitted via Blackboard.

1.1 Introduction to Abaqus CAE

As an introduction into Abaqus, please:

1) Start Abaqus CAE
2) Open the Abaqus HTML Documentation
3) From the *Getting Started with Abaqus: Interactive Edition* do:
   a) 2.2 Introduction to Abaqus/CAE
   b) 2.3 Example: creating a model of an overhead hoist
   c) 5.5 Example: skew plate
   d) 8.4 Example: nonlinear skew plate

1.2 Assignment: Snap-through of a shallow, cylindrical roof under a point load

This assignment is a variation on problem *1.1.6 Snap-through of a shallow, cylindrical roof under a point load* of the *Abaqus Benchmarks Guide*. Please use all dimensions and boundary conditions as specified in this problem. As a load, a uniform distributed vertical load is applied to the roof, so **not** the point load as in the benchmark problem.

Run the following solution procedures to assess their differences:

- Full Newton-Raphson
- Modified Newton-Raphson (Abaqus: Quasi Newton-Raphson)
- Path based (Abaqus: Riks)

Please write a single page report containing the following:

- A plot of the load-displacement curve for each of these solution procedures in a single graph and comment on the differences you see and possible difficulties you encountered in tracking the load-displacement path.
- Explain in at most 5 lines, how to recover the original structure after the snap-through.