Ansys Mechanical Beyond the Basics

Module 06 Student Reference Guide: Expanded Results and Validation

Release 2021 R2

Module 06: Learning Objectives

Upon successful completion of this module, the student should be able to:

- View and interpret some of the data provided in the Solution Information window, including warning/error messages as well as information on solver performance
- View results at different steps of a multiple-step solution
- Understand the difference between averaged and unaveraged results and relate that information to mesh refinement
- Recognize stress singularities in the model and how to cope with them
- Interpret the effect of the bolt pretension loads and assess the resultant clamping load on the bolted joint
- Postprocess contact-related results such as status, pressure, and contact force
- Troubleshoot some problematic results

Module 06: Agenda

Topics covered in the instructor demonstration:

- Solution Information
  - Solver performance
  - Warning/error messages
- Results for a multistep solution
- Recognizing and dealing with singularities
- Averaged/unaveraged results
- Contact results (status, pressure, gap, force)
- Bolt pretension results
- Beam results
- Troubleshooting

Module 06: Reference Material

Example Out-of-Core Solution Statistics

DISTRIBUTED SPARSE MATRIX DIRECT SOLVER.
Number of equations = **3465736**, Maximum wavefront = 714

Local memory allocated for solver = 3149.457 MB
Local memory required for in-core solution = 16092.762 MB
Local memory required for out-of-core solution = 3061.049 MB

Total memory allocated for solver = **6246.819 MB**
Total memory required for in-core solution = **32711.935 MB**
Total memory required for out-of-core solution = 6071.417 MB

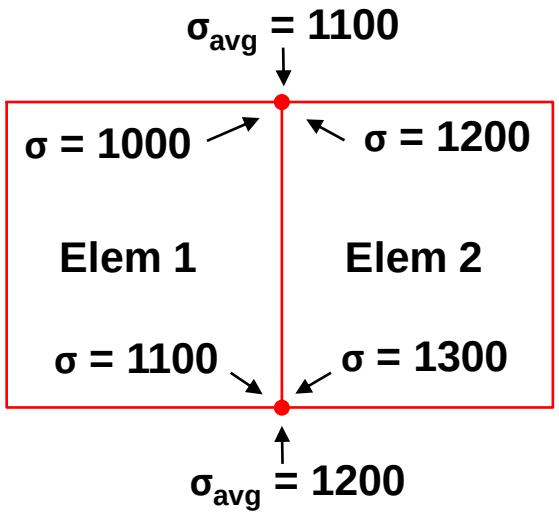
*** WARNING *** CP = 86.269 TIME= 16:27:33
The Distributed Sparse Matrix Solver is currently running in the out-of-core memory mode. This memory mode may provide significantly worse performance compared to the in-core memory mode, depending on the amount of available system memory and I/O speed.

3,465,736 DOF → 10-20 GB RAM / 1 M DOF
Approx 34 GB RAM required

Solver only allocated 6 GB RAM
Solution requires 32 GB RAM

Module 06: Reference Material

Averaged vs. Unaveraged Results

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