Stepped Shaft - Verification & Validation

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Verification & Validation

"Verification and validation" can be thought of as a formal process for checking results. We previously performed some sanity checks on the deformed shape. A further basic check is how the results change on refining the mesh. The following video shows how to recalculate the results including the stress concentration factor on a refined mesh.

Axial Stress Concentration Factor

In the table below, the **axial stress concentration factors** on the original and refined meshes are compared with the hand calculation from the Pre-Analysis step. Recall that the hand calculation used a formula from *Roark's Formulas for Stress and Strain*.

ANSYS, Original mesh	ANSYS, Refined mesh	Hand calculation
1.309	1.316	1.377

There is only a slight change on refining the mesh. The stress concentration factor on either mesh is accurate to within the level of accuracy of the cited formula, i.e. 5%. This increases our confidence in the ANSYS results.

Go to Exercises

Go to all ANSYS Learning Modules