AIM Stepped Shaft in Axial Tension - Pre-Analysis

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Problem Specification 1. Pre-Analysis & Start-Up 2. Geometry 3. Mesh

4. Physics Setup

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Pre-Analysis & Start Up

Calculation

It is recommended that you make some back-of-the-envelope estimates of expected results before launching into your computer solution. Here:

for which the following formula for the axial stress concentration factor, K, holds (Roark's Formulas for Stress and Strain, Warren C. Young and Richard G. Budynas, 2002):

We'll compare the above axial stress concentration factor to the value obtained from ANSYS.

Start-Up

Now that we have the pre-calculations, we are ready begin simulating in ANSYS AIM. Open ANSYS AIM by going to Start > AII Apps > ANSYS 18.1 > AN SYS AIM 18.1. Once you are at the starting page of AIM select the Structural template in the top left corner as shown below.



You will be prompted by the Structural Template to either Define new geometry, Import geometry file, or Connect to active CAD session. Select Define new geometry and press Next, then press Finish on the next panel. For this problem, we will be using the static calculation type. The Model Editor will launch automatically. In order to use the units given to us in the problem, press the Home button in the top left corner and select Units > U.S. Engineering.

Go to Step 2: Geometry

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