

ANSYS - Vibration Analysis of a Frame - Step 5

Problem Specification

1. Start-up and preliminary set-up
2. Specify element type and constants
3. Specify material properties
4. Specify geometry
5. **Mesh geometry**
6. Specify boundary conditions
7. Solve!
8. Postprocess the results
9. Validate the results

Step 5: Mesh geometry

Generate the Mesh

To bring up the MeshTool, Select:

Main Menu > Preprocessor > MeshTool.

Click on **Set** under **Element Attributes** in the MeshTool.

MeshTool

Element Attributes:

Global

Set

☐ Smart Size

Fine

6

Coarse

Size Controls:

Global

Set

Clear

Areas

Set

Clear

Lines

Set

Clear

Copy

Flip

Layer

Set

Clear

Keypts

Set

Clear

Mesh:

Lines

Shape:

☒ Radio1
☐ Hex/wedge

☒ Free
☐ Mapped
☐ Sweep

3 or 4 sided

Mesh

Clear

Refine at:

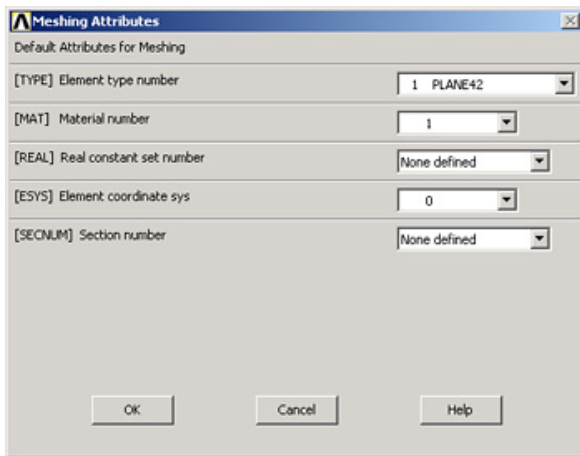
Elements

Refine

Close

Help

This brings up the *Meshing Attributes* menu. You will see that the correct element type, material number and real constants are already selected since we have only one of each.

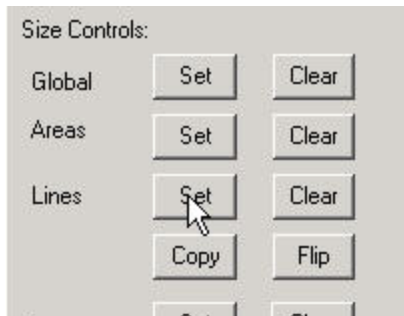


Close this menu by clicking **OK**.

Define Number of Elements for Each Line

We'll use 20 elements for AB and 20 elements for BC to be consistent with Cook et al.

Under **Size Control** and **Lines**, click **Set**.

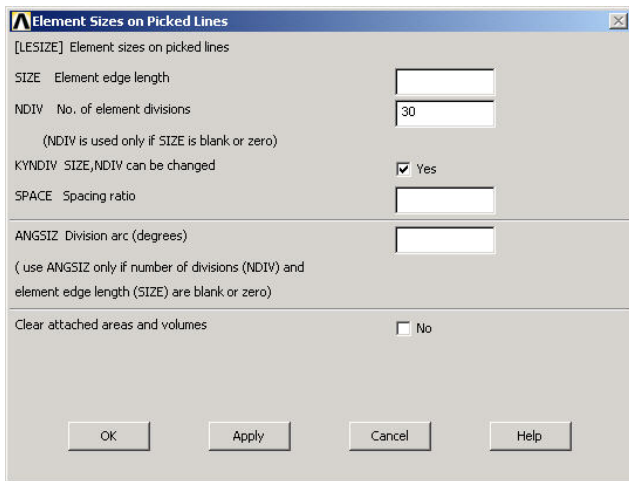


Select line AB.



Click **OK**.

Enter 30 for **NDIV**.



Element Sizes on Picked Lines

[LESIZE] Element sizes on picked lines

SIZE Element edge length

NDIV No. of element divisions

(NDIV is used only if SIZE is blank or zero)

KYNDIV SIZE,NDIV can be changed ☒ Yes

SPACE Spacing ratio

ANGSIZ Division arc (degrees)

(use ANGSIZ only if number of divisions (NDIV) and element edge length (SIZE) are blank or zero)

Clear attached areas and volumes ☐ No

OK Apply Cancel Help

Click **Apply**.

Select line BC.



Min, Max, Inc

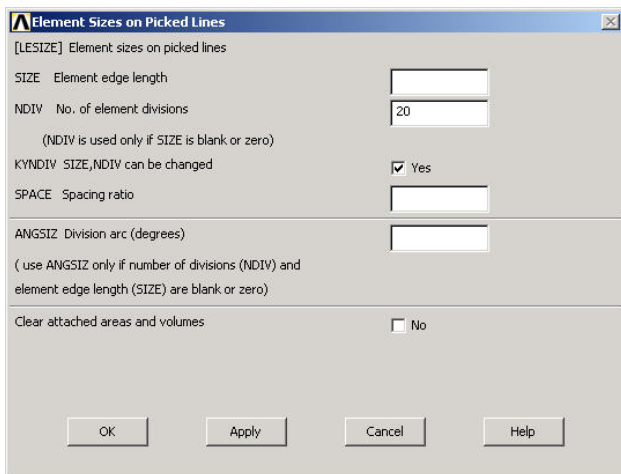
OK Apply

Reset Cancel

Pick All Help

Click **OK**.

Enter 20 for **NDIV**.



Element Sizes on Picked Lines

[LESIZE] Element sizes on picked lines

SIZE Element edge length

NDIV No. of element divisions

(NDIV is used only if SIZE is blank or zero)

KYNDIV SIZE,NDIV can be changed ☒ Yes

SPACE Spacing ratio

ANGSIZ Division arc (degrees)

(use ANGSIZ only if number of divisions (NDIV) and element edge length (SIZE) are blank or zero)

Clear attached areas and volumes ☐ No

OK Apply Cancel Help

Click **OK**.

Creating the Mesh

In the *MeshTool*, click on **Mesh**. This brings up the *pick* menu. Click on **Pick All**.

The geometry has been meshed and the elements are plotted in the graphics window. Close the *MeshTool*.

Save your work

Once you have successfully created the mesh, click on **SAVE_DB** in the *ANSYS Toolbar* to save the database.

Go to [Step 6: Specify boundary conditions](#)

Go to [all ANSYS Learning Modules](#)