

## #1278: HyperMesh – Mesh Pattern Refinement

**Product:** HyperMesh

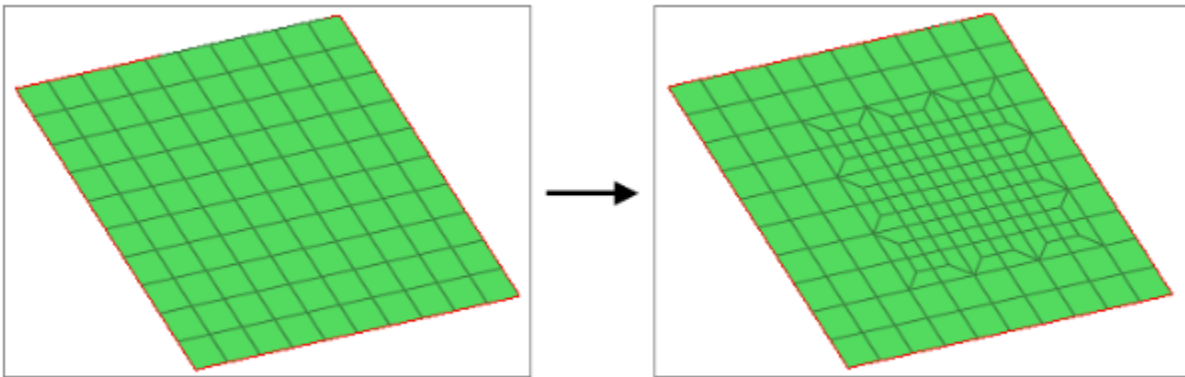
**Product Version:** HyperMesh 14.0 or above

### Topic Objective

Mesh pattern refinement tool in Hypermesh.

### Topic Details

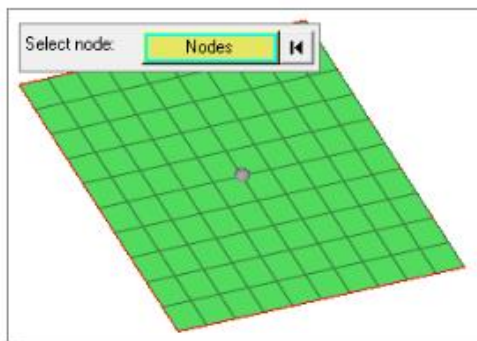
Use the **Mesh Refinement** tool to create a regular orthogonal mesh.



Pattern based mesh refinement

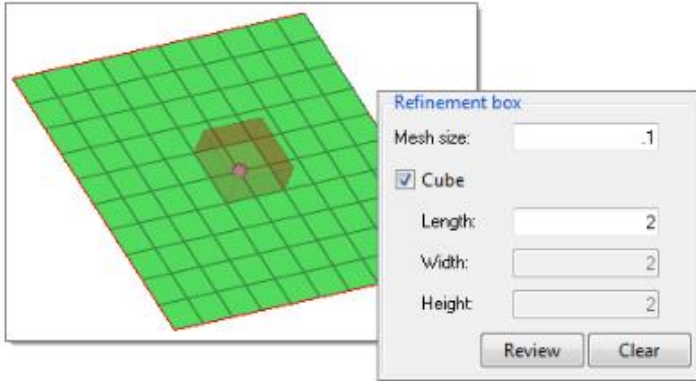
Pre-requisite: The initial mesh must be a regular mapped quad mesh, not a free quad mesh.

1. To open the Mesh Refinement tool, from the menu bar, click Mesh > Edit > Elements > Refine by Pattern.
2. Using the Select node: Nodes selector, select the center node to start the uniform mesh refinement.



3. For Select system, select a global or local system to be used for mesh propagation and box alignment directions.
4. Define the Refinement box, which determines the constant refinement zone. The elements inside this box should be the same size.
  - a. In the mesh size field, enter the fine mesh size.  
Note: The size should be smaller than the initial mesh.

- b. In the Length field, specify the length of the Refinement box.
- c. To preview the box, click Review.

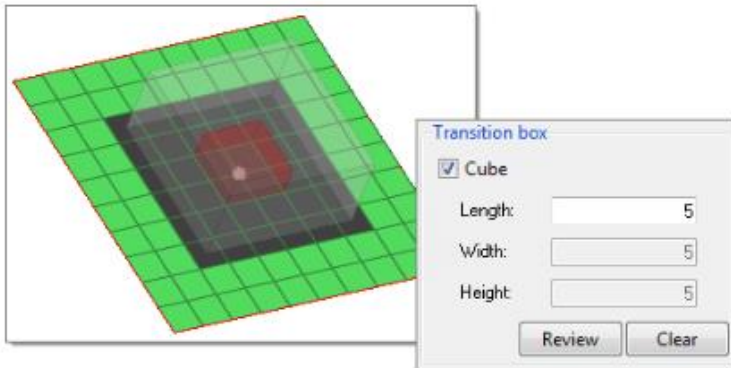


5. Define the Transition box.

- a. In the Length field, specify the length of the Transition box. The mesh will be transitioned to match the initial mesh.

Note: The Transition box should enclose the Refinement box. The size of the Transition box determines how aggressive the transition will be. It is recommended that you limit the transition to 1 element connection 3 elements (1:3).

- b. To preview the box, click Review.



6. Click Mesh. Attached 1D elements are refined.

