Postprocessing Features

Postprocessing Workflow/Procedures/Features

Here is the place to accumulate which postprocessing procedures (workflows) are common, and which features are needed to support those procedures. I've filled in part of "Mesh Validation" as an example of what I have in mind.

Conventions

Let's use these conventions.

- List workflow step by step in a numbered list.
- Use **bold** to indicate a used or needed feature.

CUBIT

Mesh Validation with CUBIT

1. build mesh in CUBIT
2. check mesh quality of all volumes with the "Distortion" metric within CUBIT
3. improve the mesh if negative values are found
4. repeat until mesh looks reasonable
5. run acdtool (acdtool mesh stats mesh.ncdf) to **check euler numbers** and general quality for the mesh.
6. run acdtool (acdtool mesh check mesh.ncdf) to **check for invalid elements** in the mesh.
7. run acdtool (acdtool mesh fix mesh.ncdf mesh.fixed.ncdf) to **fix any invalid elements** in the mesh.

Mesh Validation with ParaView

1. build mesh in CUBIT
2. load mesh in ParaView
3. apply **Mesh Quality** filter
4. look at **2D Spreadsheet View** of quality to find cutoff quality for n worst elements
5. apply **Threshold** filter, to select only elements with quality worse than cutoff
6. optionally glyph the thresholded vertices with spheres so that they show up
7. optionally make mesh surface visible, but transparent to give context for where the meshing errors are.
8. fix the mesh in these areas, using CUBIT
9. repeat until mesh achieves the recommended values are achieved for the various quality metrics.
10. run acdtool (acdtool mesh stats mesh.ncdf) to **check euler numbers** for the mesh.
11. run acdtool (acdtool mesh check mesh.ncdf) to **check for invalid elements** in the mesh.
12. run acdtool (acdtool mesh fix mesh.ncdf mesh.fixed.ncdf) to **fix any invalid elements** in the mesh.

Omega3P

S3P

Track3P

Multipacting Analysis

Dark Currnt Analysis

T3P

Pic3P

- Load mesh and typically a **time sequence** of mod files and **particles** using Paraview.
- **Scale fields** globally
- **Slice/Cut** certain domains away, if applicable
- **Color particles** according to momentum, **scale color map**

- Add **symmetric halfs, quarters** to create a full-geometry model
- Play **animation**, create **snap shots**

Tem3P

- Load mesh and mod files using Paraview.
- **Set view angle** by entering rotation around x, y, and z axis (or in spherical coordinates).
- Scale to max/min.
- Visually inspect locations of max/min.
- Check **summary report** of max/min node.
- **Pick** the region around max/min node.
- Check **spreadsheet** of nodal values for the **selected** or **picked** point, area, or region.
- Check **temperature gradient** between two arbitrary points or planes or regions (use average values for the plane and region).
- Check **spreadsheet of the selection** for detailed information.
- Check **report of boundary condition** for sanity check.
