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Visualization of Stress Distribution in a Solid Part

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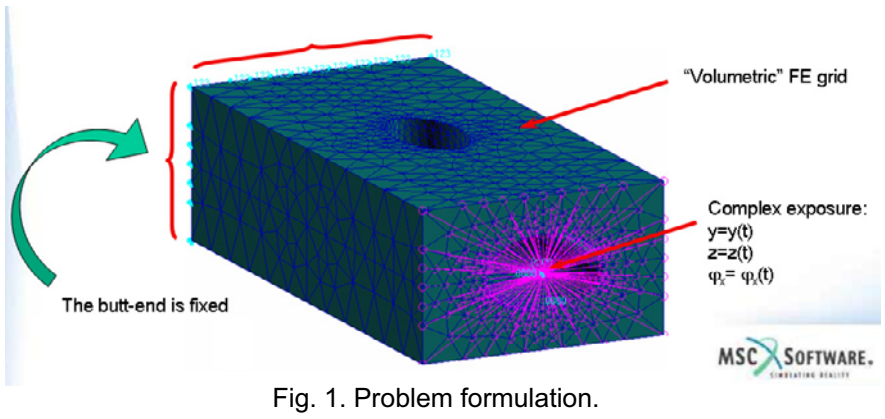

Fig. 1. Problem formulation.

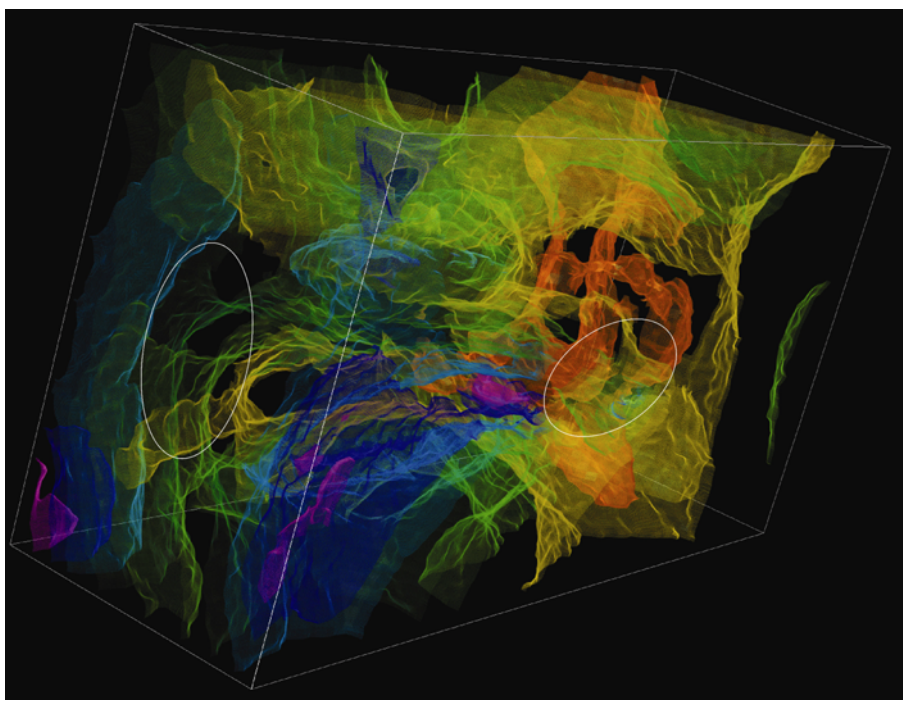

Fig. 2. Stress distribution semi-transparent iso-surfaces.

The direct presentation of three-dimensional arrays is one of the basic visualization problems. Using cross-sections or iso-surfaces, one can not get a full presentation of a structure and peculiar properties of a solution or process obtained. GDT Software Group has developed a semitransparent voxel technique of visualization, which allows solving the problem. Spatial stress distribution in a solid part is one of the striking examples of visualization. The figures show the spatial stress distribution inside a solid part with two elliptic through holes. Figure 1 shows the problem formulation. The one butt-end of the solid part is fixed, and the opposite one is complexly exposed. Figure 2 shows the visualization result of stress distribution inside the solid part, which was realized by an MSC.Nastran solver of MSC.Software Corporation and a ScientificVR® package of GDT Software Group provided the visualization. The stress distribution through the solid part exposed is visualized well and presented using the semitransparent voxel technique in iso-surface realization.