SAND2012-6331C

SC12 Scientific Visualization Showcase Submission

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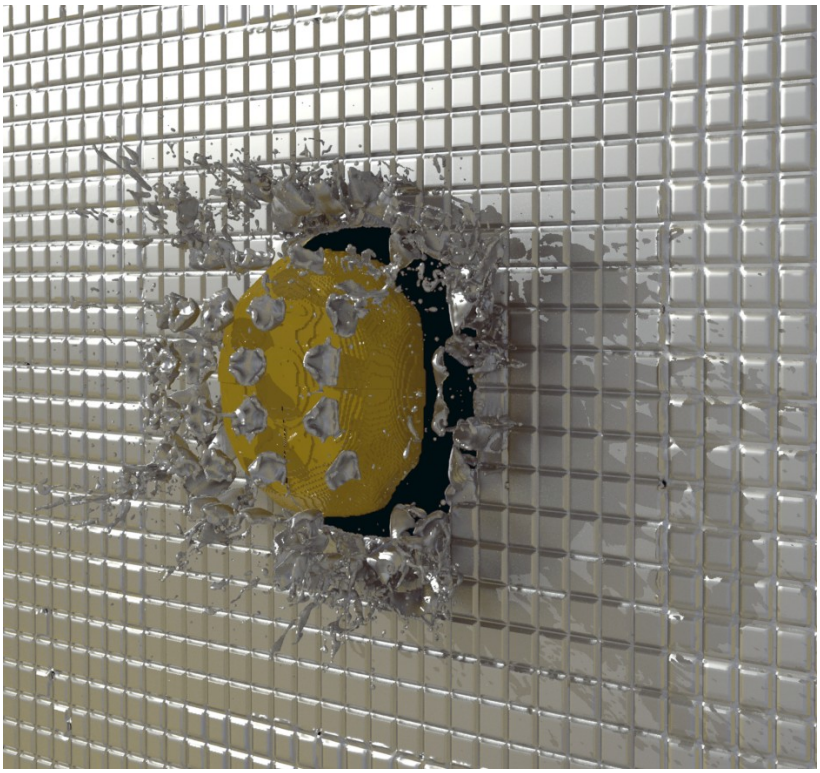
Explosive Charge Blowing a Hole in a Steel Plate Animation



The animation shows a simulation of an explosive charge, blowing a hold in a steel plate. The simulation data was generated on Sandia National Lab's Red Sky Supercomputer. ParaView was used to export polygonal data, which was then textured and rendered using a commercial 3d rendering package.

Using ParaView's co-processing capability, data was captured directly from the memory of the running super computer simulation. We then created a set of seamless fragment surfaces extracted from the underlying cells' material volume fractions. ParaView outputs a sequence of models that are converted to obj polygonal objects, using NuGraf, a model format conversion program. The objects vary in size, with some objects consisting of around a million polygons. One quarter of the animation was generated. The other 3 sections were instanced and textured. Instancing the imported geometry does not create more geometry, the original instance is used to generate the other sections. This saves memory and speeds up the rendering. A custom script controlled the loading and rendering of the sequential models. The final object sequence was rendered offline with Modo 6.0.

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