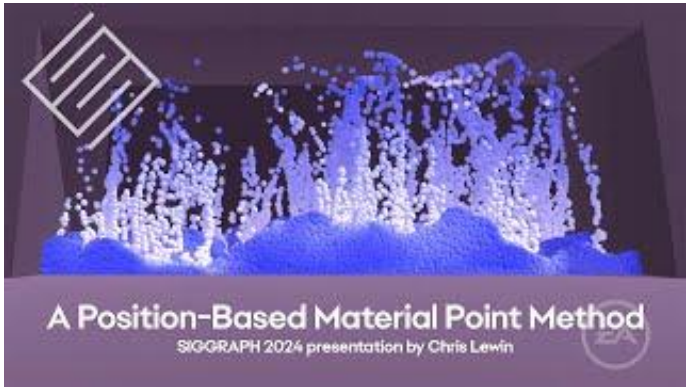
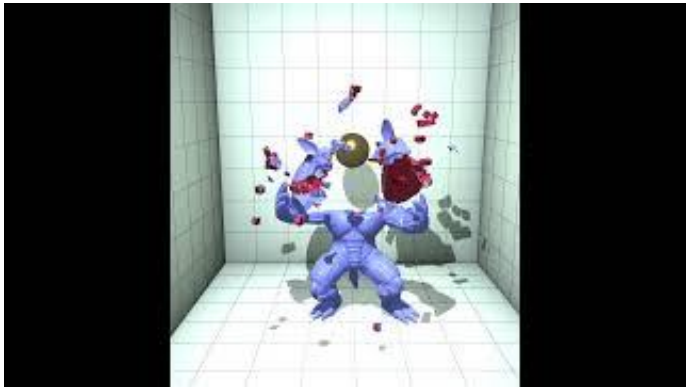
BREAKPOINT

Real-time soft-body destruction and fluid simulation
powered by PBMPM and mesh shading

What?

- PBMPM (SIGGRAPH ‘24)
- Real-time voxelized soft-body destruction (SIGGRAPH ‘24)
- Particle-based fluid surface reconstruction using mesh shaders (I3D ‘24)





Why??

- Realtime physics simulations have exciting applications and mesh shading makes it more feasible
  - But there are new techniques that haven't been explored in the context of gameplay yet.
- PBMPM is new and efficient, but we can take it a step further by bringing it in 3D on DirectX 12.
- Opportunity to combine a handful of techniques in a way that's never been done before.
  - Destruction of soft bodies with fluid
- Waterbending is cool:

How???

Four-person team, four prong approach. Broadly:

1. DirectX 12 Engine work (pipeline, scene, and initial collision detection)
2. Fluid simulation
3. Soft body destruction
4. Mesh shading fluid surface construction and rendering