Using Blender To Model the Formation of Impact Craters

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Abstract

Using 3D applications to make impact crater simulations which look and behave accurately, as well as testing limitations of the simulations. This can help other students visualize and understand how impact craters work.

Method

Using Blender 3D, a free application, I used its physics engine (fluid simulation), to replicate how impact craters would work in reality. There were many parameters that I can use to get different results such as viscosity, size of meteorite, speed, mesh resolution and much more.
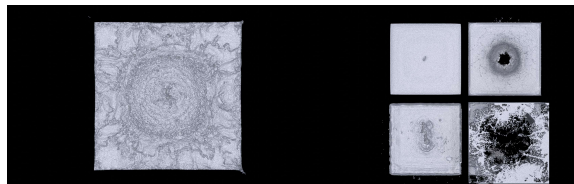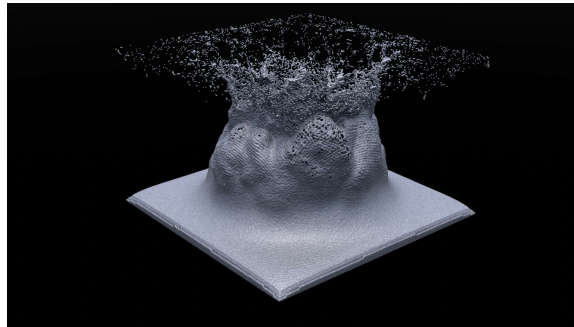

Next Steps

Using other 3D applications and seeing if there are other differences and why. Some options can be Unreal engine and NVIDIA Omniverse. The smallest change can make a big impact. Hearing any suggestions and feedback from others will also improve the projects quality. Some ideas for new testing would be to use real scales and geography of actual places with craters and try to see if the program can make a similar craters as the real one. Another goal is to submit these videos for classroom use to help students study and help them understand how impact craters work and are formed.
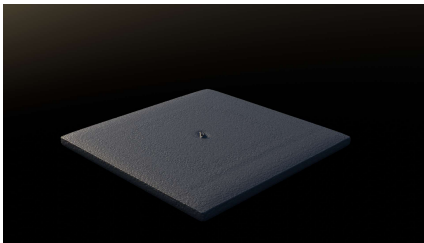
Viscosity Modifier, this makes the material have a stronger thickness making it less effected by impacts
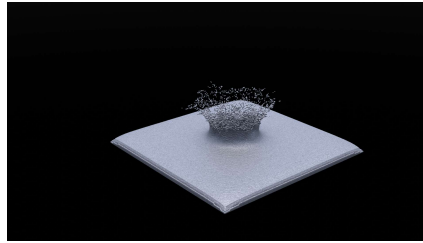
Velocity, changing the speed of the impactor can make the crater and impact much larger.
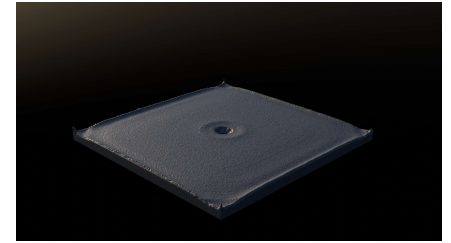
Default Crater, this is what we will compare with other variable to see what changes what difference.

Purpose

The purpose of this project is to test the limits of physics simulations and how to do them as well as creating a visual tool for students to help them understand the concepts of impact craters which can help them in their studies.

Questions or comments?

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Want to learn more? Scan below to watch my presentation!

Check out a simulation rendered. Scan below!