

Battleships

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This project is adapted from the Wave and Triangle Bump project. The waves are traced as trochoidal waves, which is more exact simulation of water waves than original sin/cos waves. In this project, we can see the wave height decreases from right to left. When wave is high enough, you can able to see breaking waves where the ships flip. Also, in wave mode 0, there will be a big tide going from right to left periodically.

All the normal vectors are calculated in geometric shader. All the ships are constructed in geometric shaders. The z positions of the ships with pink top are generated randomly.

In this project, you are able to control the ship with yellow top. You can move the ship leftward, rightward, forward, and backward. You can let the ship fire missiles (small orange triangles). If the missiles hit other ships, the hit ships will be destroyed. You can only destroy one ship per missile. And each missile will disappear if it travels more than 10 units distance or it hits one of the ships. You can fire another missile after the terminal prints "Ready to fire again!", otherwise, nothing will happen.

View Controls:

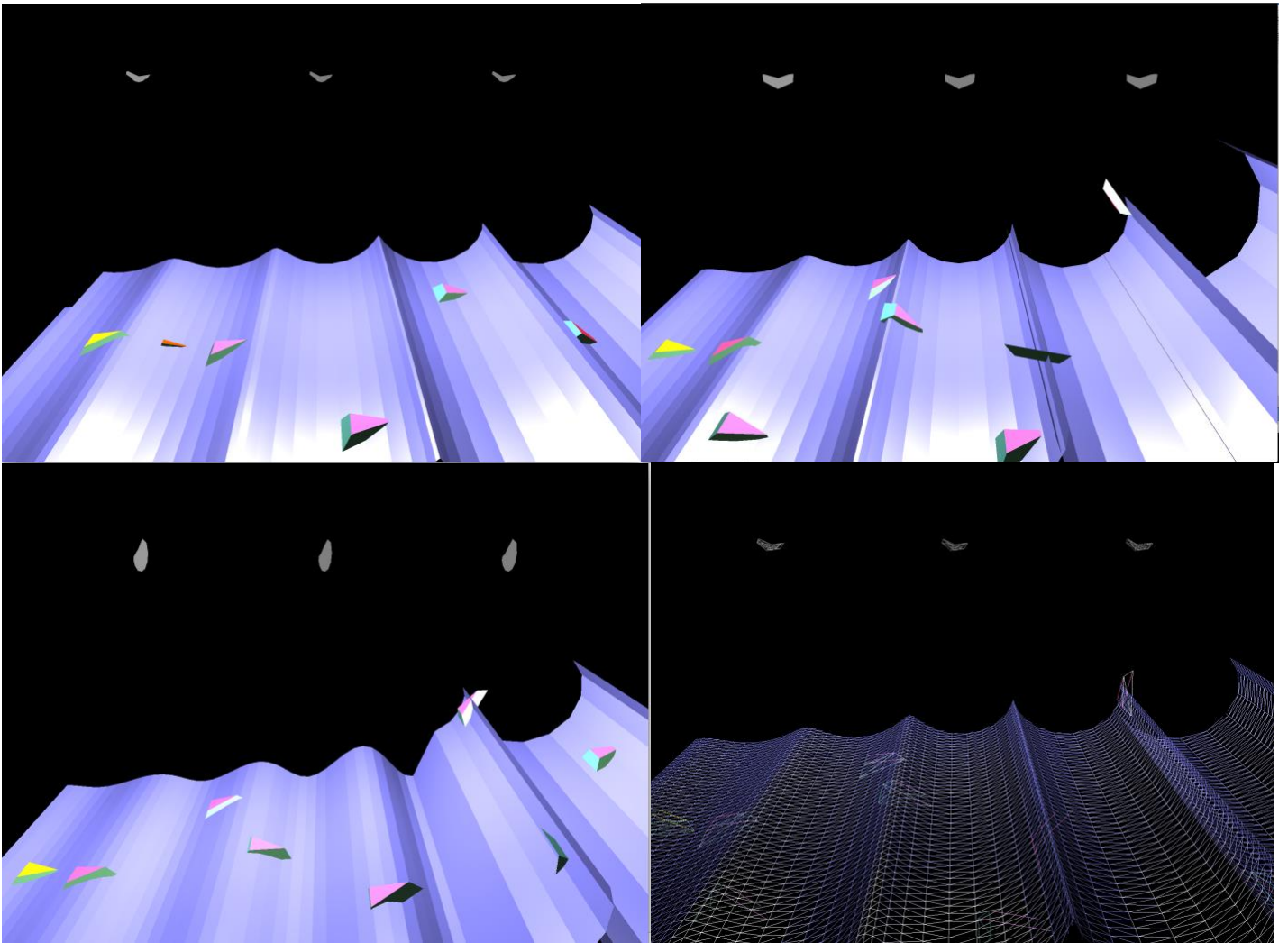
- Press arrow keys to adjust the view direction.
- Press 'B' (both) to toggle whether tide or no tide are generated.
- Press 'Q' (wireframe) to toggle whether wireframe or fill mode.
- Press 'M' (mesh) to increase the mesh resolution.
- Press 'm' (mesh) to decrease the mesh resolution.
- Press '1', '2', '3' to toggle the three lights.
- Press '4' to toggle the spotlight.
- Press 'E' key (Emissive) to toggle rendering Emissive light.
- Press 'U' key (Specular) to toggle rendering Specular light.
- Press 'V' key (Viewer) to toggle using a local viewer.

Wave Controls:

- Press 'h' and 'H' key to reduce or increase MAX wave heights.
- Press 'l' and 'L' key to reduce or increase MIN wave heights.
- Press 'B' (both) to toggle whether tide or no tide which is generated periodically.

Ship Controls:

- Press 'k' and 'K' key to reduce or add enemy ships.
- Press 'A' key to move ship farther(leftward).
- Press 'D' key to move ship nearer(rightward).
- Press 'W' key to move ship forward.
- Press 'S' key to move ship backward.
- Press 'F' key to fire a missile.



In Picture 1, you can see the orange missile fired from the ship with yellow top.