Project 3: Three.js Project

Benjamin D. Sutter

University of Maryland Global Campus

CMSC 405: Computer Graphics

Professor Amitava Karmaker

February 11, 2021

This project started out using modeling-starter.html as a basis. After tinkering with the file for a bit, I started to get an idea for what kind of scene I wanted to make. After finding the various geometries to put in the scene, I got the idea to make the shapes move around in the torus. It took a few tries to get their positioning and rotations correct, but they turned out as intended. The hardest part was figuring out how to add and remove objects from the model/scene. There were quite a few variations I tried, the worst being creating and recreating each object upon each toggle. I eventually found out that you can toggle visibility, so that made everything a breeze. The lights also took a couple attempts to get their positioning right. They have a bit of color, but I don't think they are bright enough for it to be that noticeable There was also a bit of trouble with making sure the full model was always visible by the camera, but that only took a few tries to find out what each parameter did. I might have gone a bit overboard with all the functionality/components, but I had a ton of fun messing around. It was also great to mess around with html and discover how Three.js works. The test plan in the form of figures showcasing the eleven transformations and the various components that control the scene (aside from the animated ones) of the assignment starts on the next page.

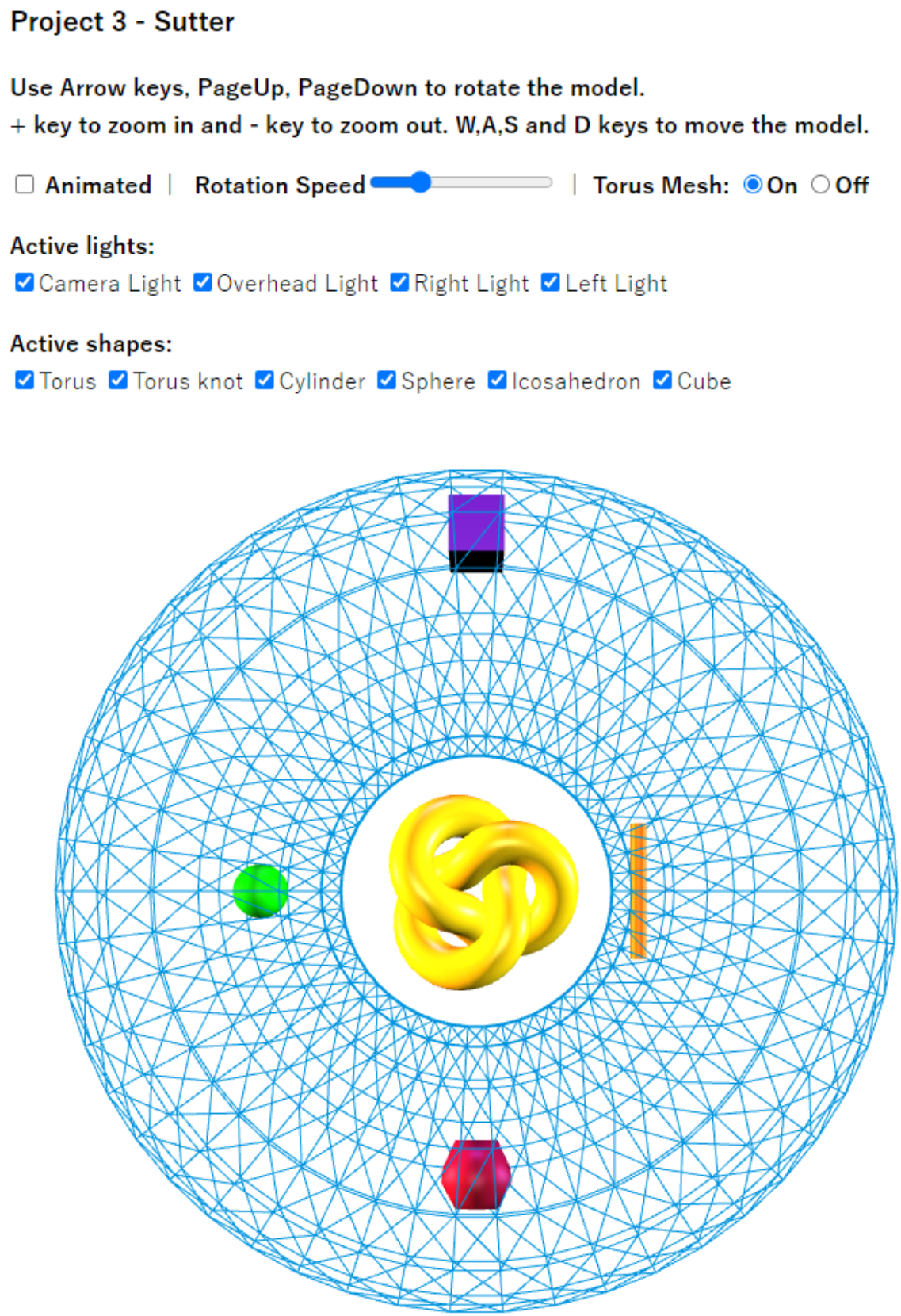

Figure 1. Default starting position of scene.

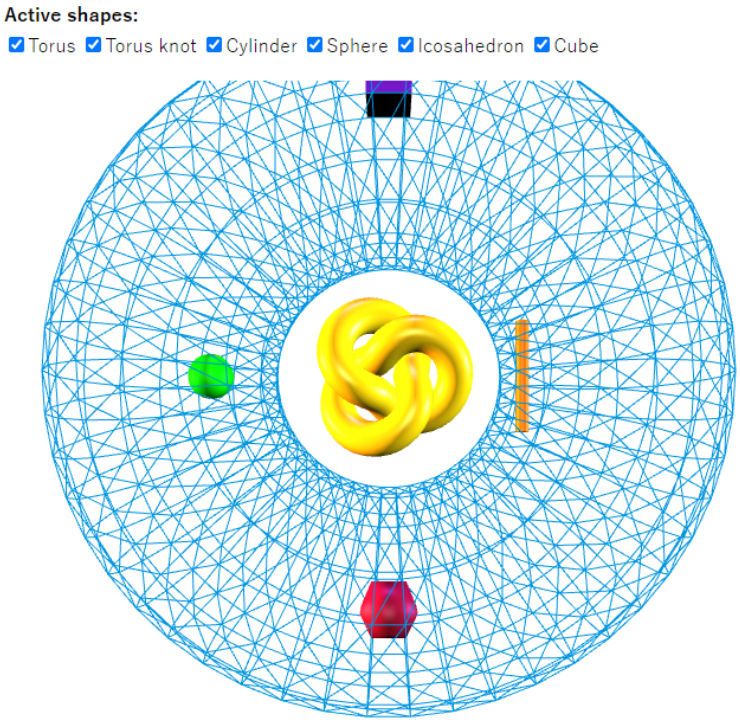

Figure 2. Model moved upwards after w key presses.

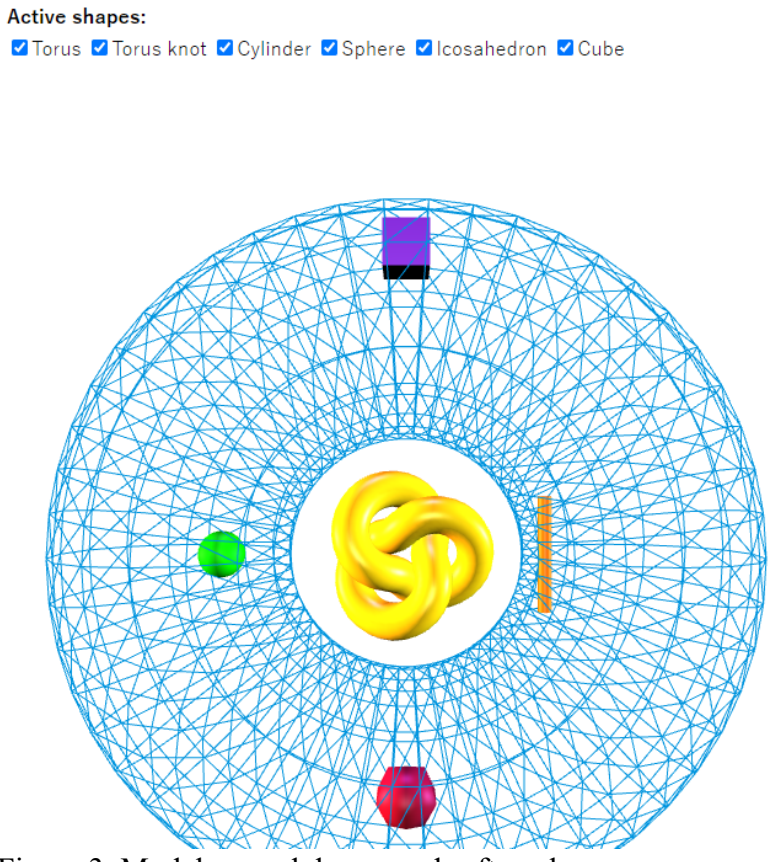

Figure 3. Model moved downwards after s key presses.

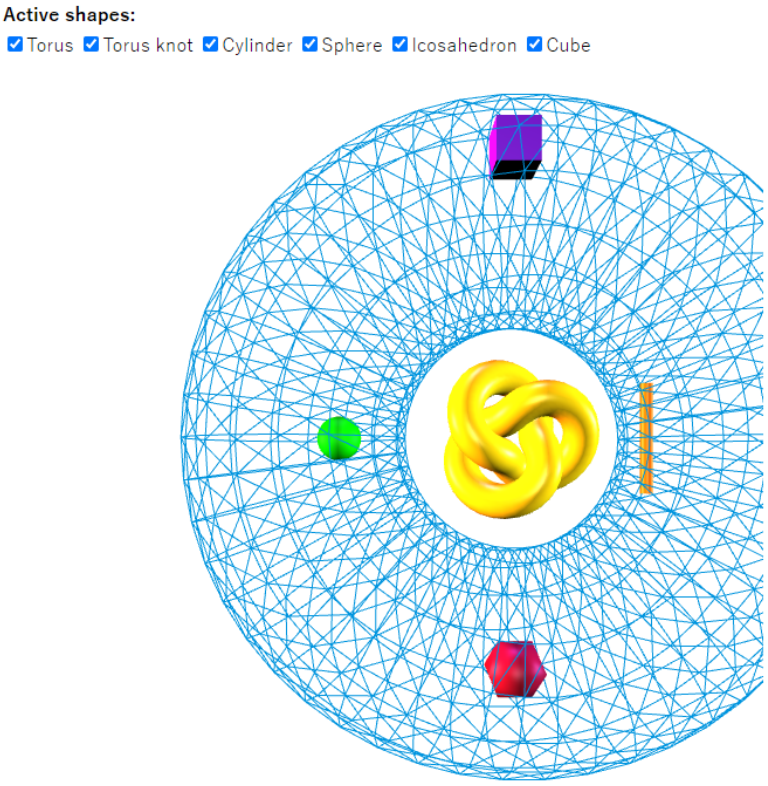

Figure 4. Model moved to the right after d key presses.

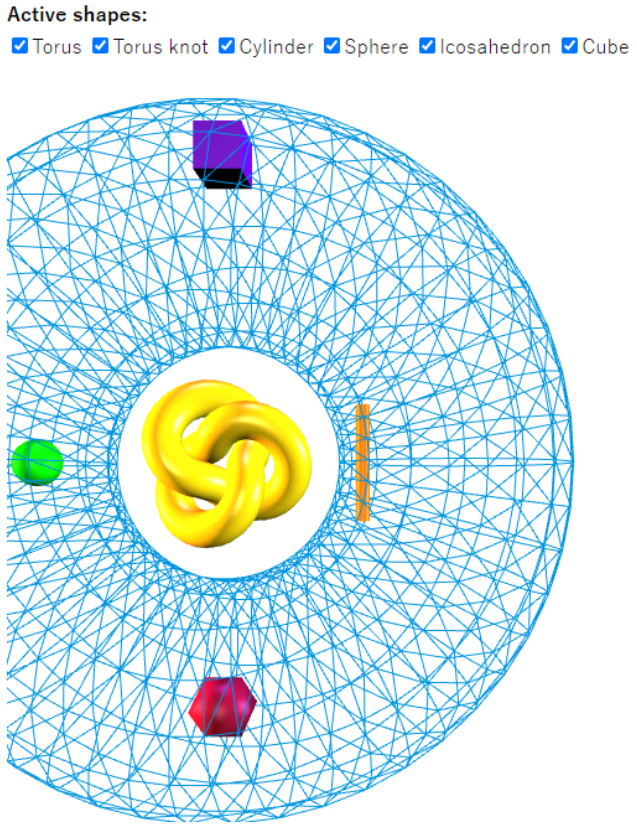

Figure 5. Model moved to the left after s key presses.

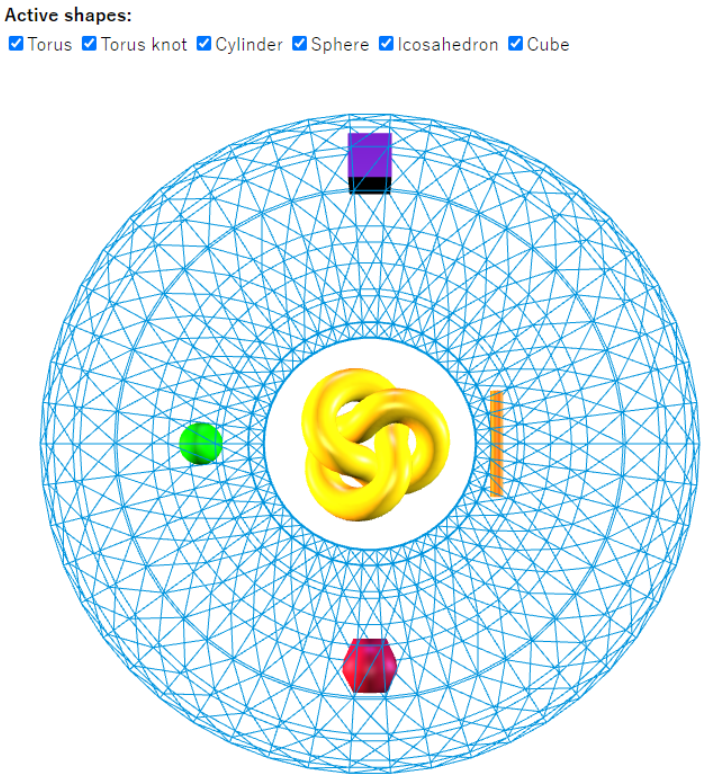

Figure 6. Model reset to default position after home key press.

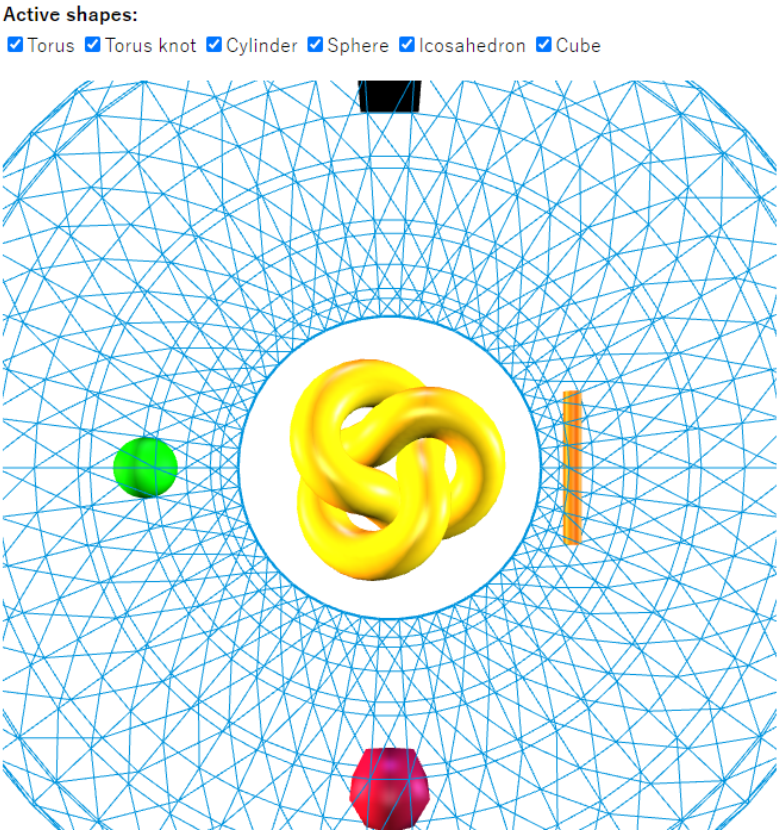

Figure 7. Model zoomed into after + key presses.

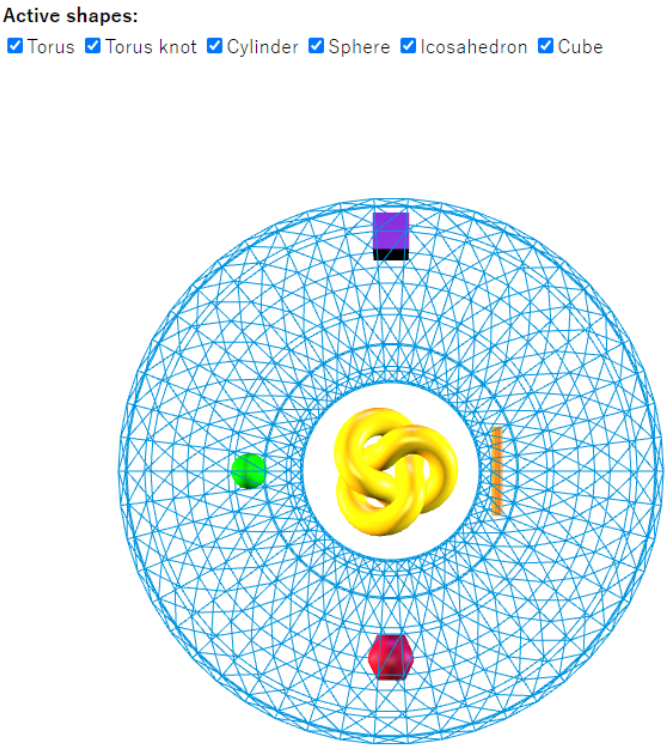

Figure 8. Model zoomed out of after - key presses.

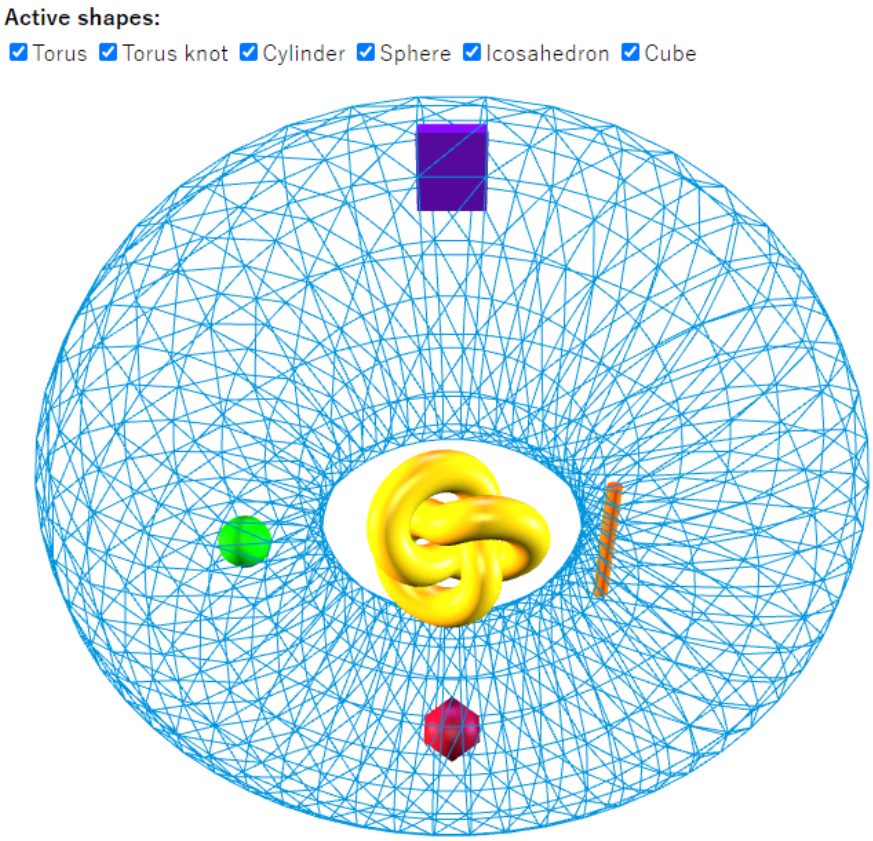

Figure 9. Model tilted downwards after down arrow presses.

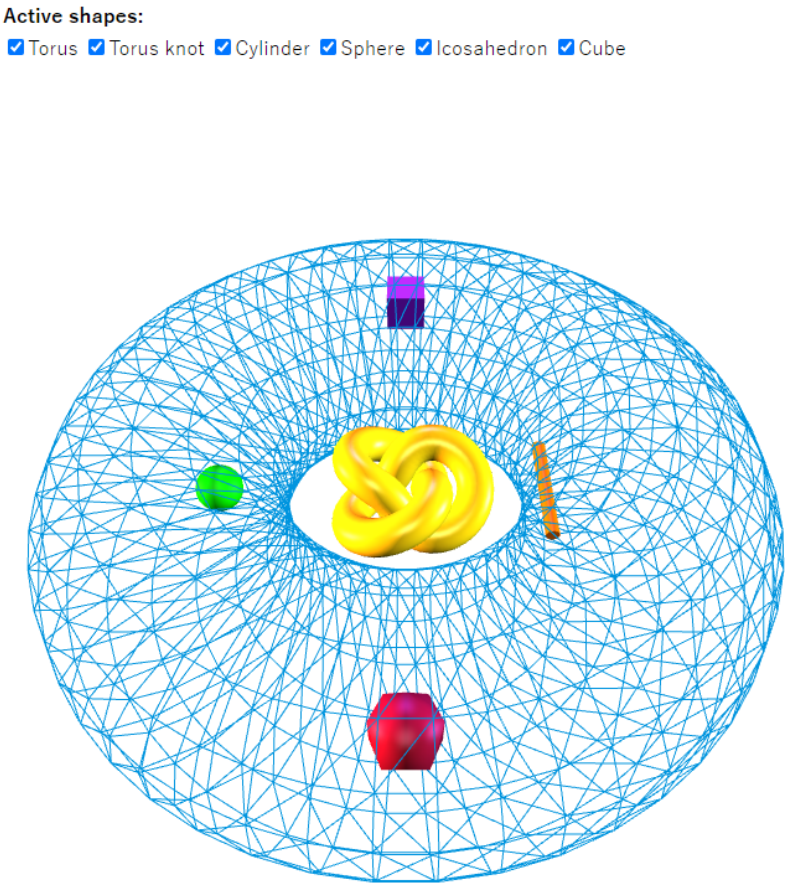

Figure 10. Model tilted upwards after up arrow presses.

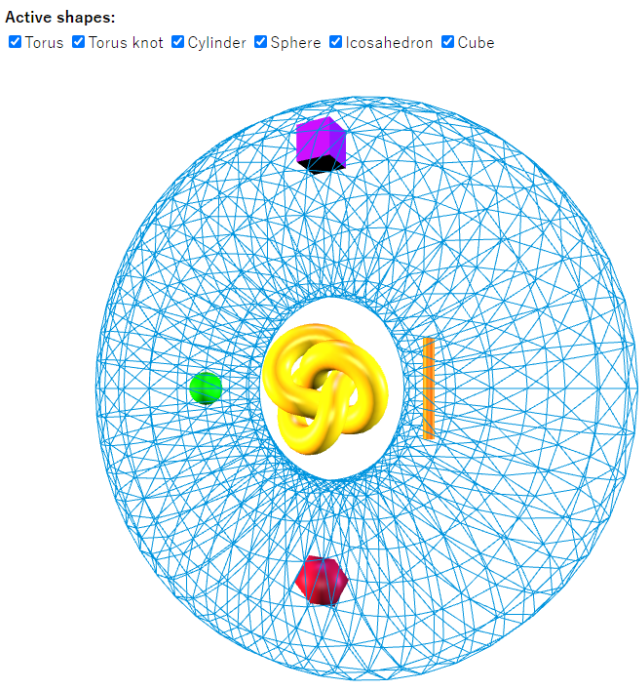

Figure 11. Model tilted to the left after left arrow key presses.

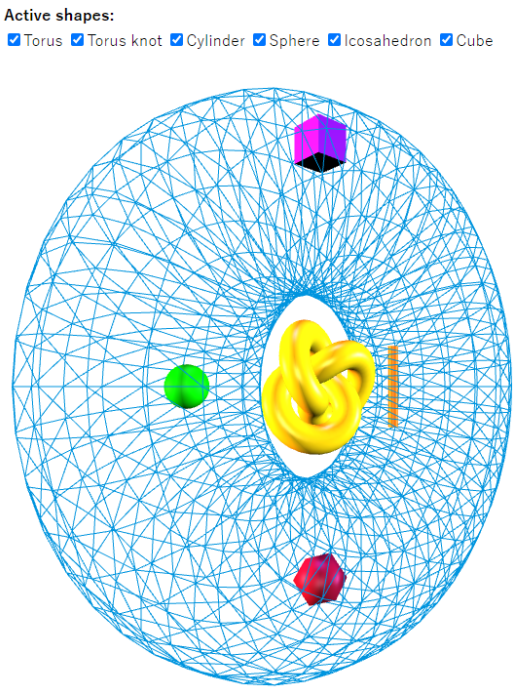

Figure 12. Model tilted to the right after right arrow key presses.

Figure 13. Torus mesh toggled off.

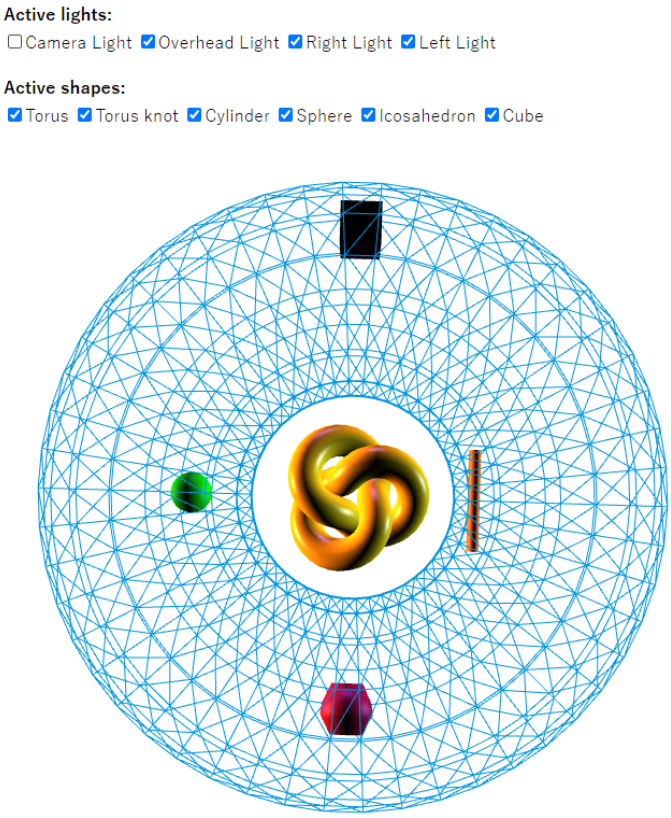

Figure 14. Camera light toggled off.

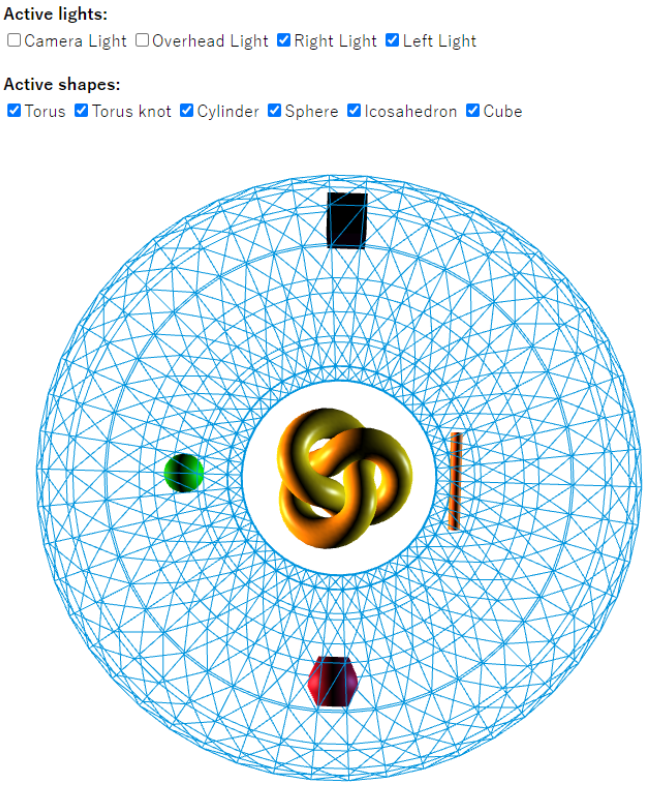

Figure 15. Overhead light toggled off.

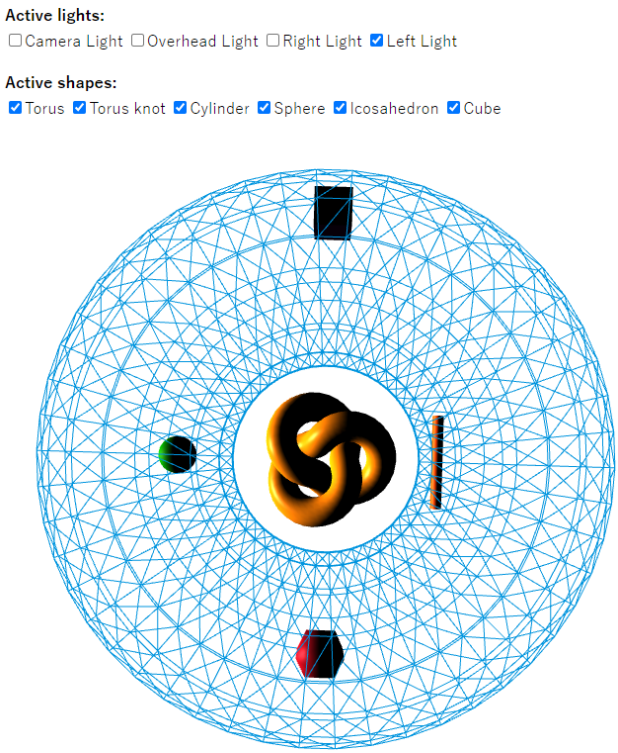

Figure 16. Right light toggled off.

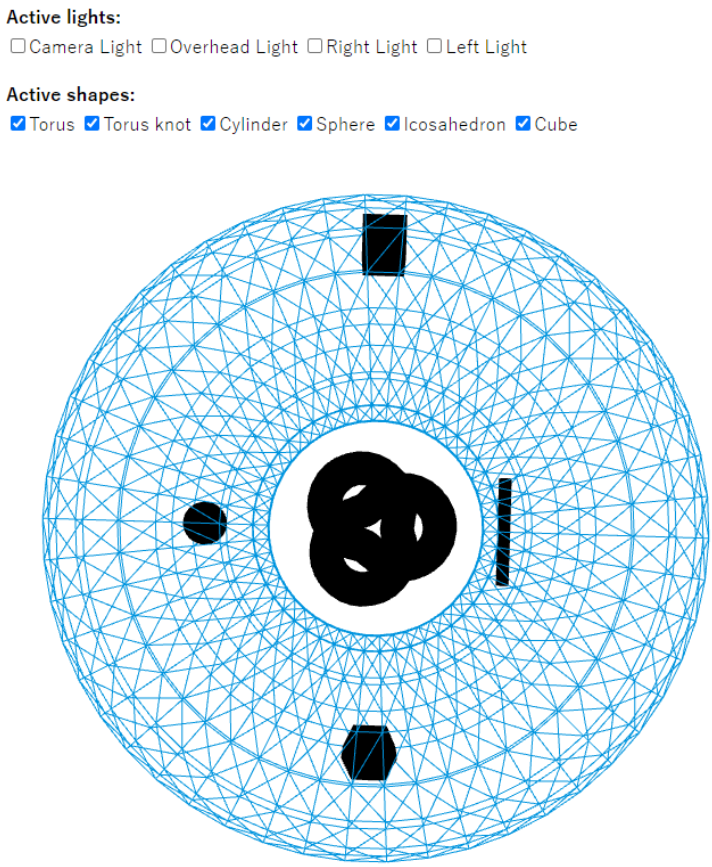

Figure 17. Left light toggled off.

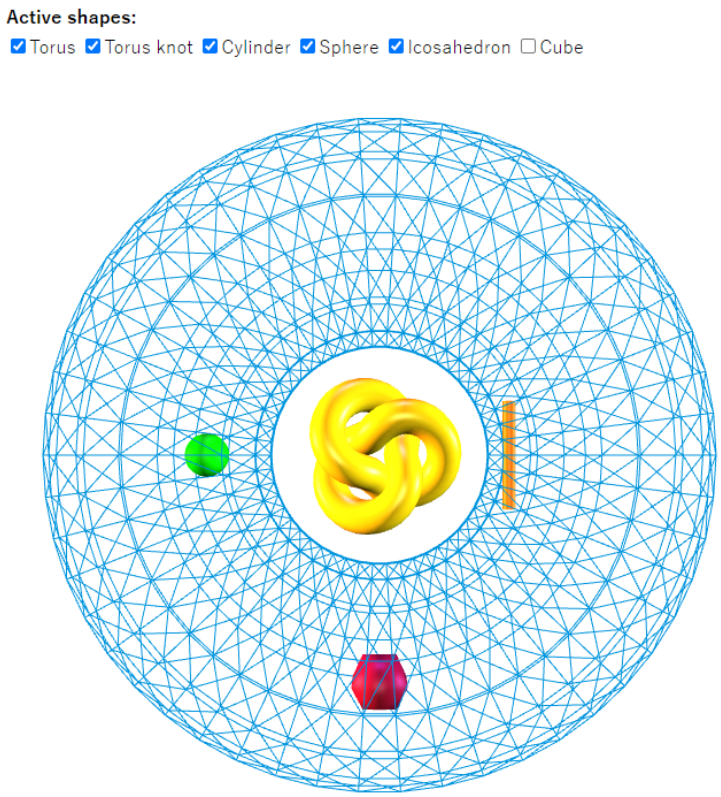

Figure 18. Cube toggled off.

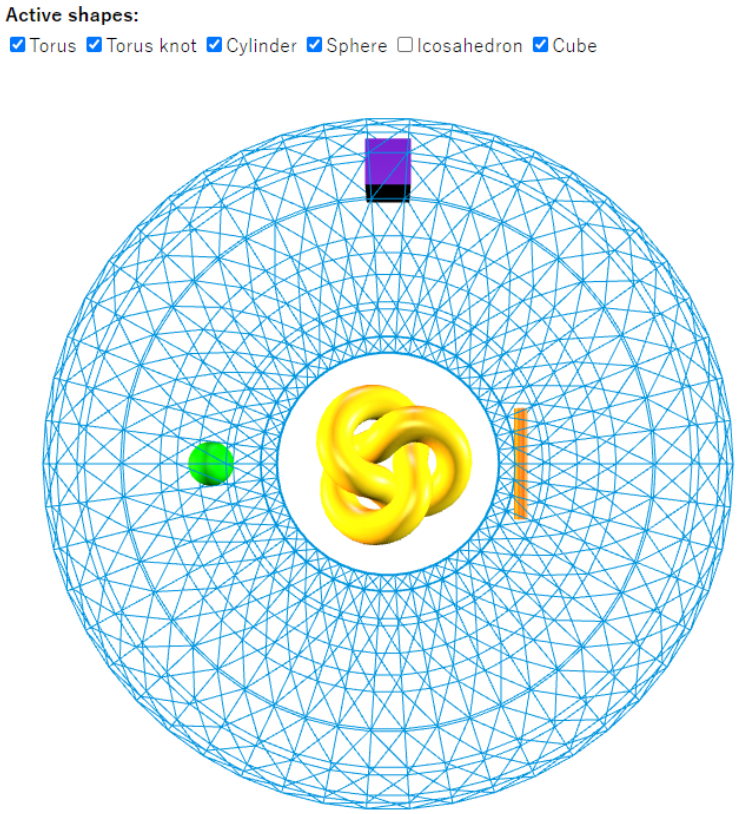

Figure 19. Icosahedron toggled off.

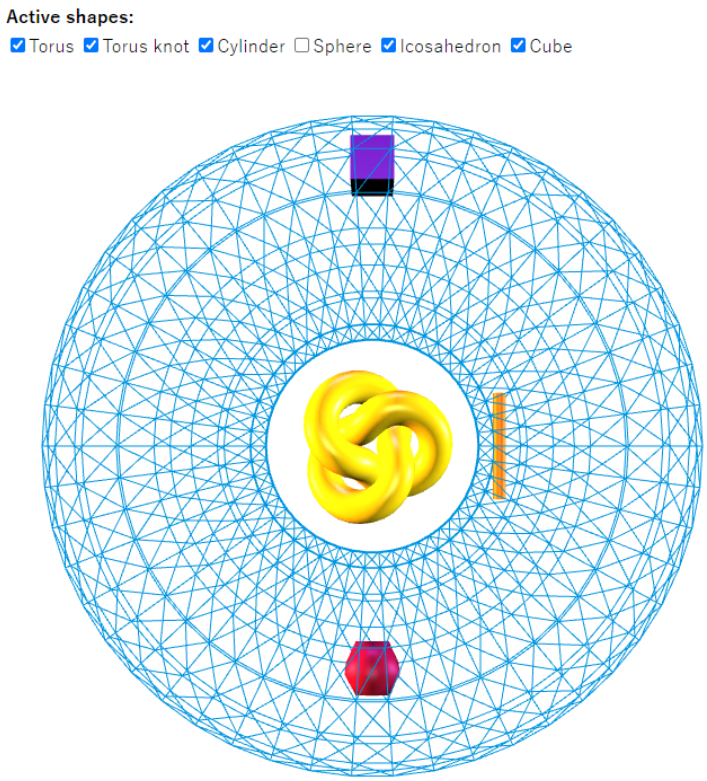

Figure 20. Sphere toggled off.

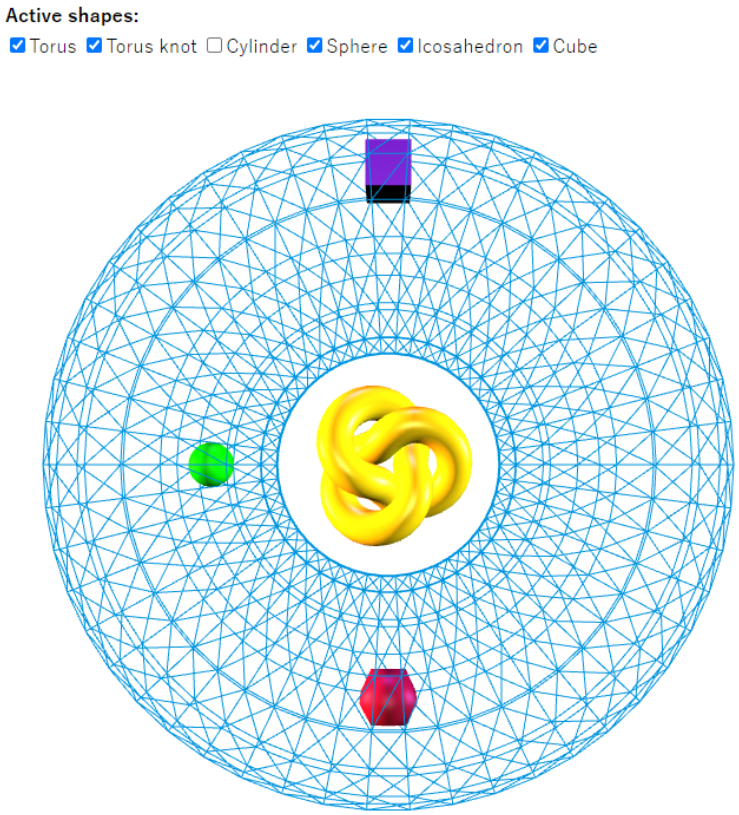

Figure 21. Cylinder toggled off.

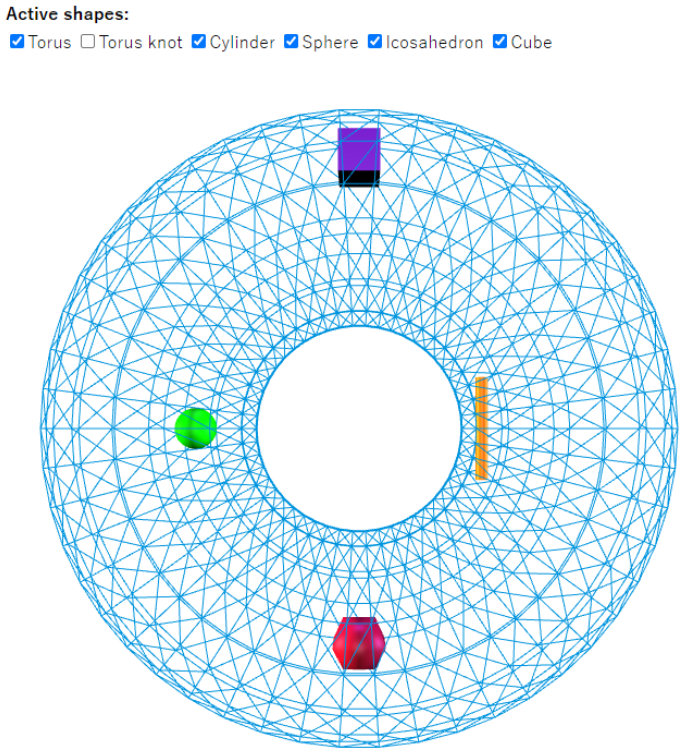

Figure 22. Torus knot toggled off.

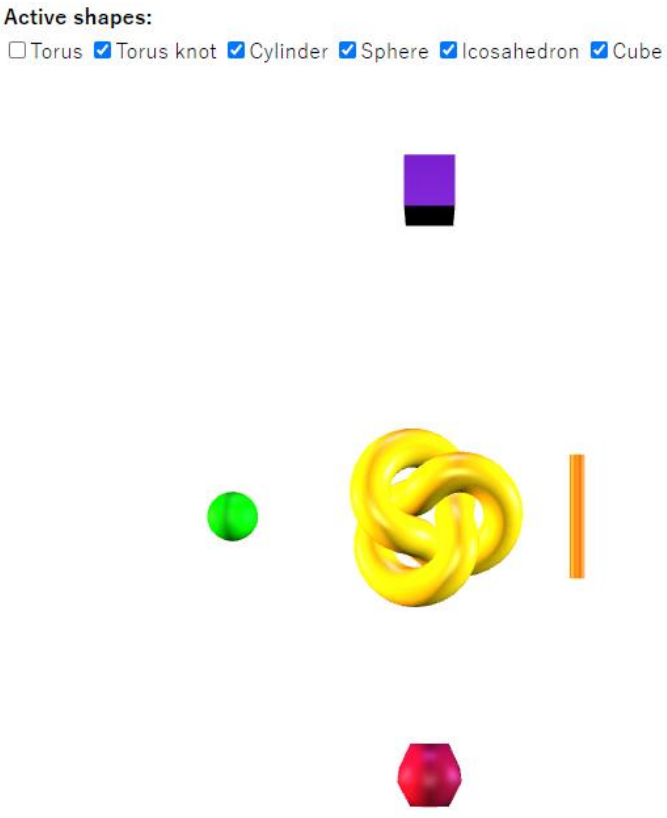

Figure 23. Torus toggled off.