|  |  |  |
| --- | --- | --- |
|  | Quad Tree | No Quad Tree |
| SAT | 300fps, 3000 dots | 650fps, 6500 dots |
| Without SAT | 350fps, 16 dots | 800fps, 26 dots |

Bounding Circles as used always after the quad tree or without the quad tree.

Objects are only checked if they collide with one another once. For SAT there are no duplicate normals that only differ by facing the opposite direction.

Using SAT increases the amount of dot products by a lot. Using a quad tree as well decreases the amount of dot products being called as there is less collision checks. The implementation of the quad tree is not worth the cost in fps as it drops to nearly a quarter of what it is without it.

Without SAT there is a lot less dot products being called. Using the quad tree lowers the amount but also decreases the frames. Sometimes the circles