Jelly Tetris

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Mass spring system

- Basic grid-mesh with diagonally connected vertices
- Composite blocks are connected basic blocks
- Relatively high stiffness + a little damping → Jelly-like behaviour
Mass spring system
Collision detection and application

- **Broad collision between set of Blocks**
  - AABB → simple and fast

- **Narrow collision between particles**
  - Each particle has a radius (ca. $\frac{1}{3}$ edge rest length)
  - Only consider particles on the boundary

- **Apply elastic collision impulse**
  \[ v_1' = 2 \frac{m_1 v_1 + m_2 v_2}{m_1 + m_2} - v_1 \]
  - **Direction** is determined via *neighbouring surface-edge normals*
Debugging - Fails

```
implicit euler->
....__-''......
```

![STUPID BLOCK](image)

![Image](image)
## Debugging - Fails

<table>
<thead>
<tr>
<th>EXPECTATION...</th>
<th>REALITY...</th>
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<tbody>
<tr>
<td><img src="image1" alt="Expectation" /></td>
<td><img src="image2" alt="Reality" /></td>
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**JellyTetris.exe**

**IS THIS A CORRECT MESH?**
Debugging - Fails

THOU SHALT KEEP THYSELF IN A STABLE STATE

AND ESTABLISH CONTACT WITH A CLERIC TO ACQUIRE THE SERVICE OF AN EXORCISM

But wait…
There’s more!
Debugging - Success?

Symplectic euler revealed little flaws in force calculations.
Debugging - Success?
FINALLY!!!

YYYYYEEEEEEEEEEEEEAAAAAAA