

Geschichte und Ästhetik der audiovisuellen und digitalen Medien II

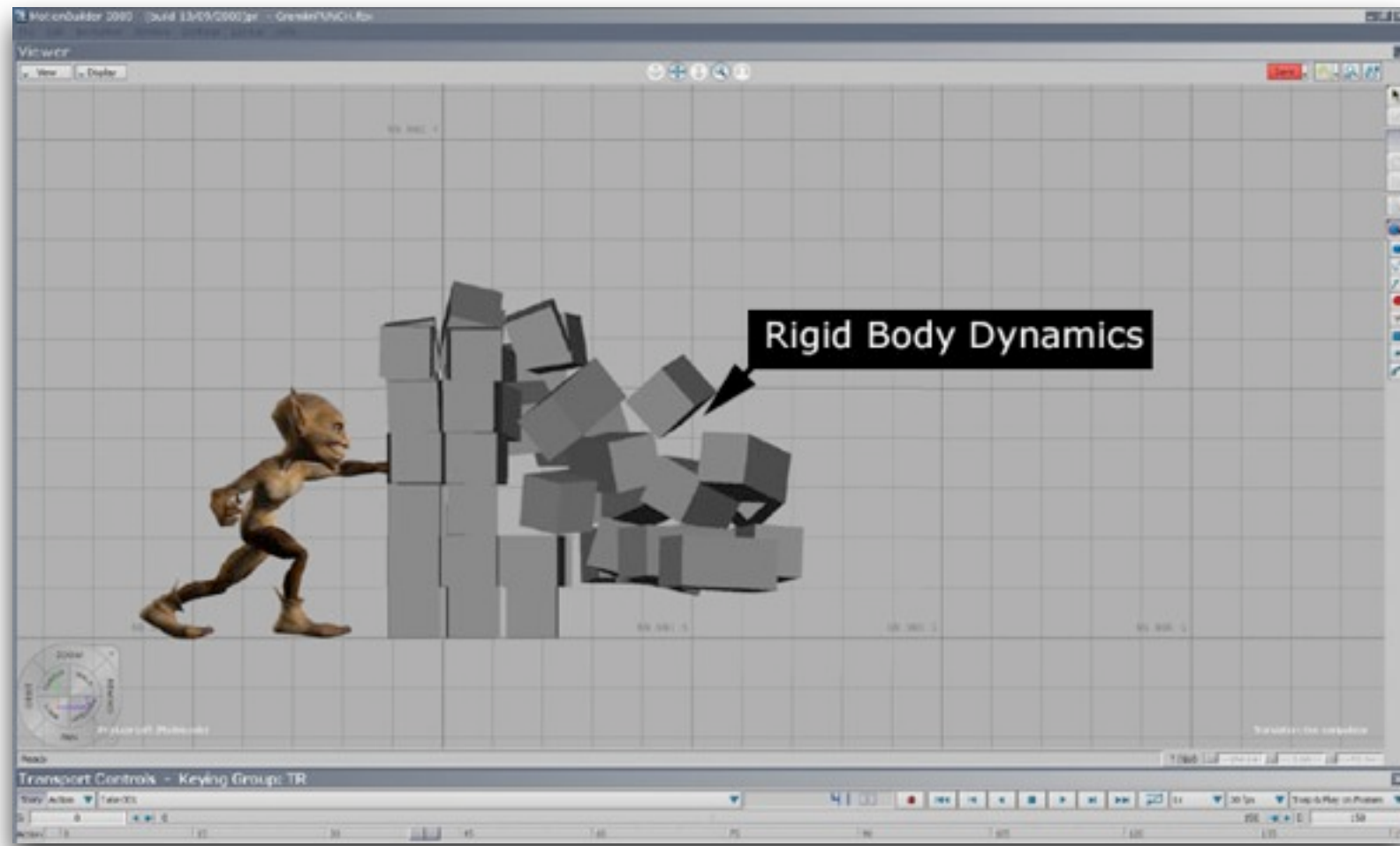
Game Physics

Prof. Dr. Jochen Koubek



Festkörperphysik

Festkörperphysik



Massen

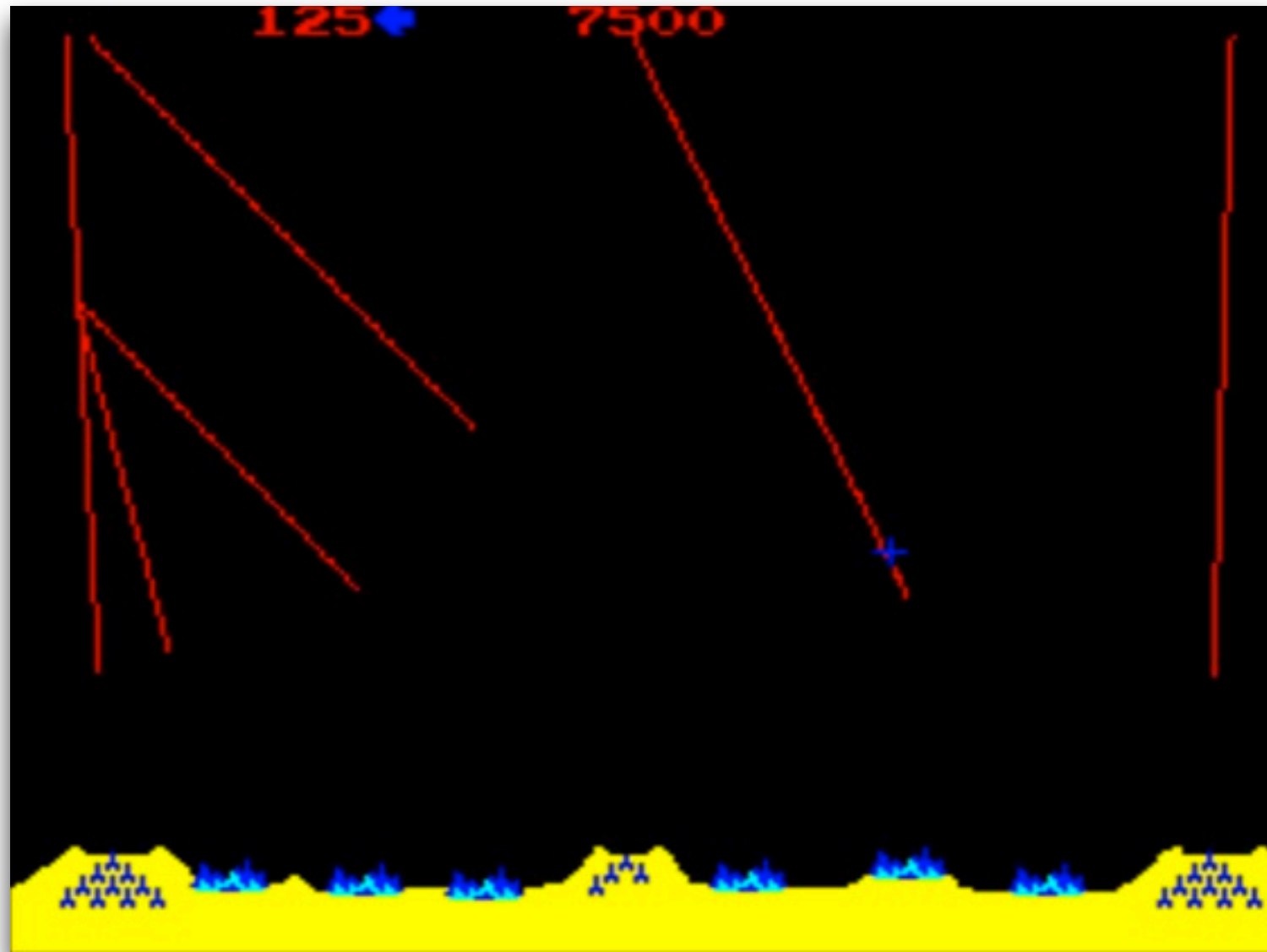
Kräfte

Position



Civilization

Geschwindigkeit



Missile Command

Rotation



Time Pilot



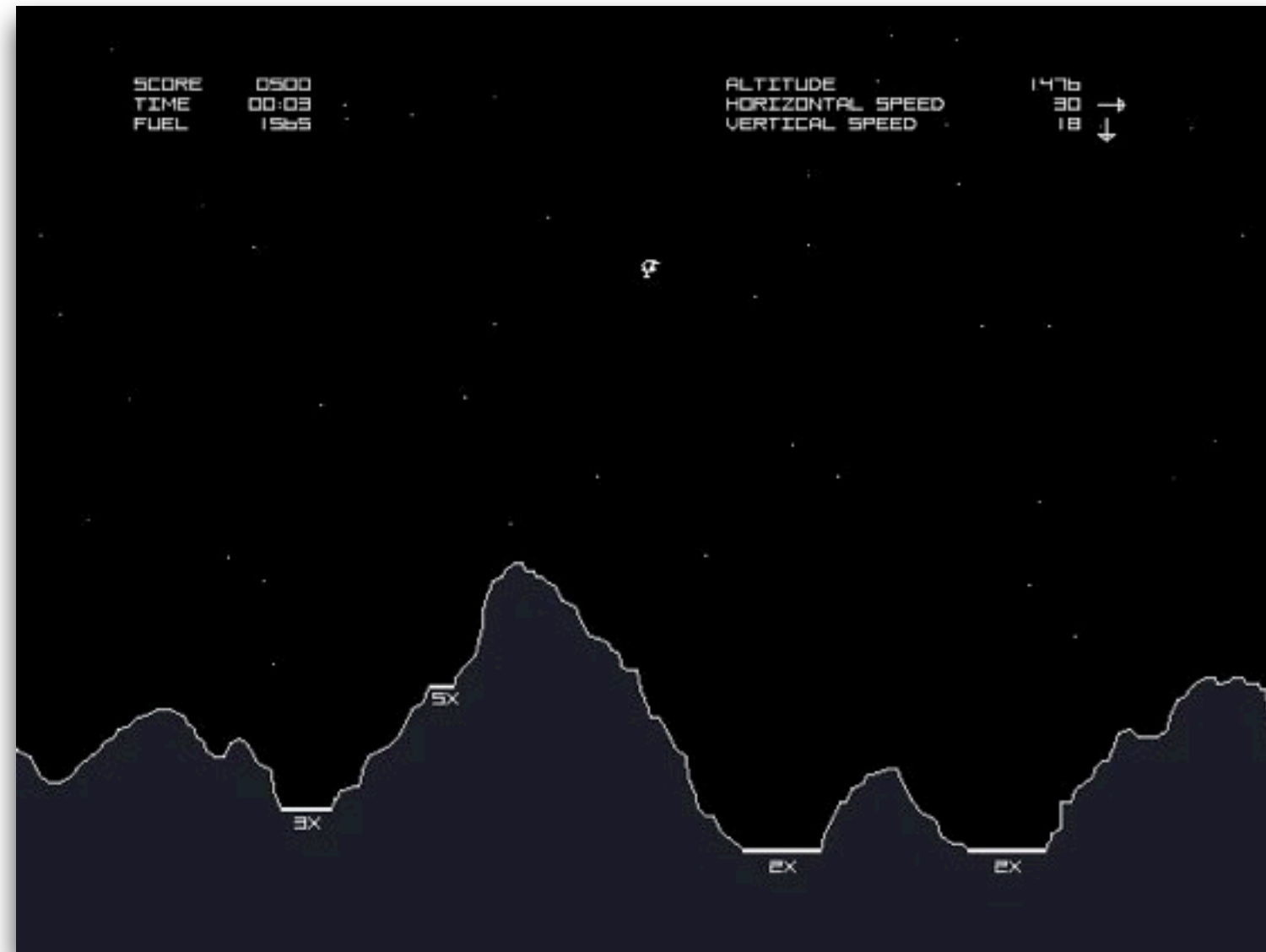
Katamari Damacy

Kraft



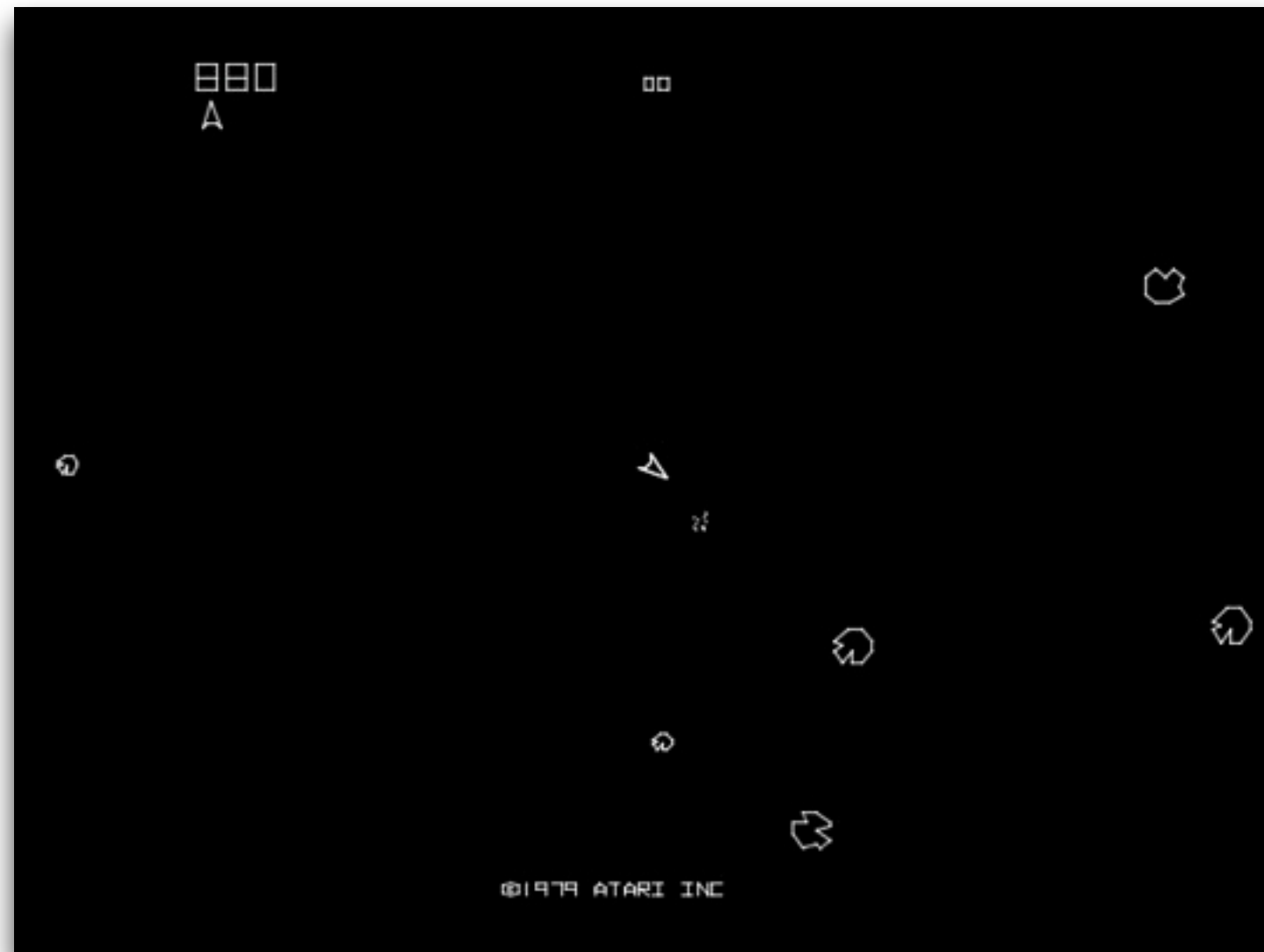
Marble Madness

Beschleunigung und Schwerkraft



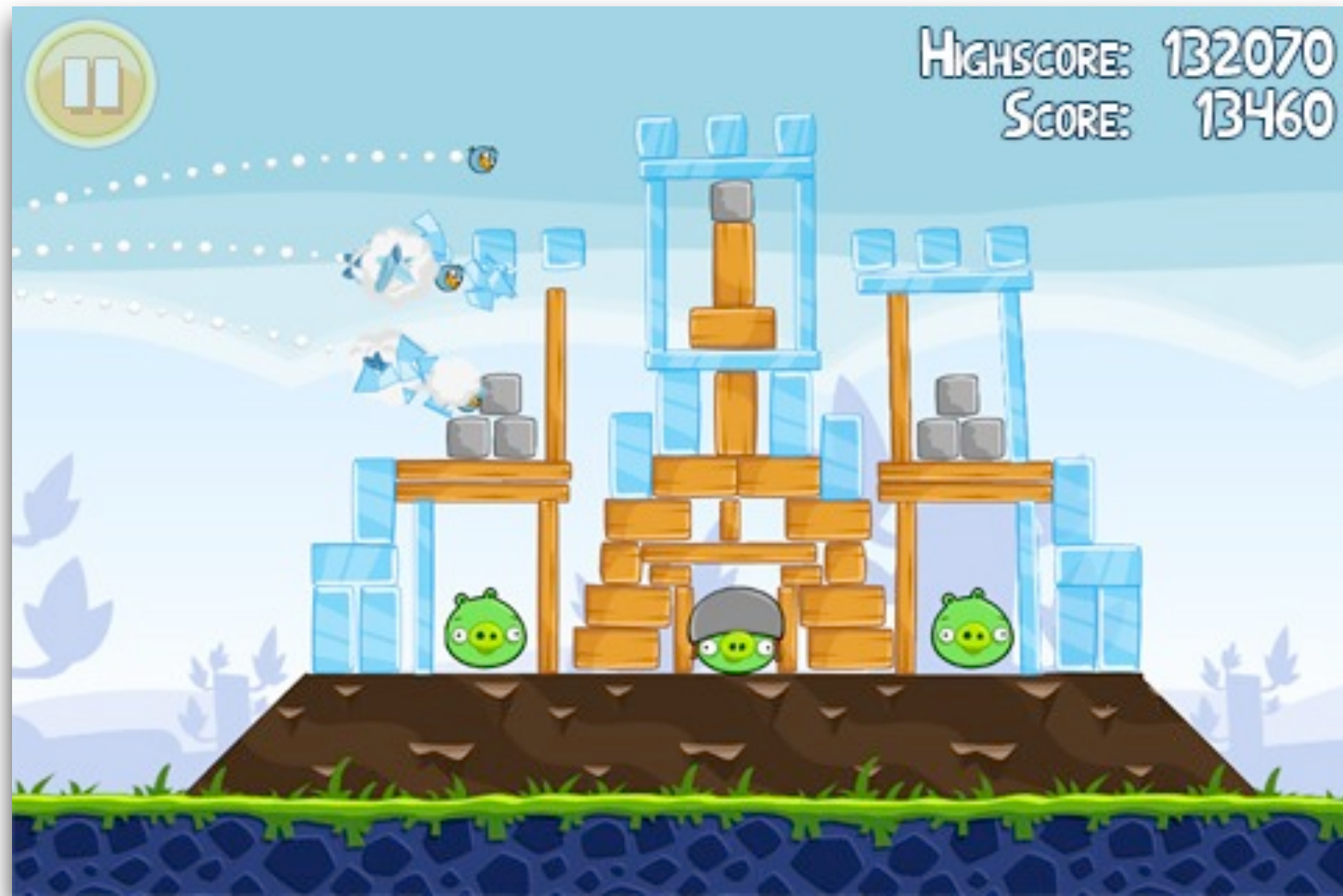
Lunar Lander

Reibung



Asteroids

Impuls



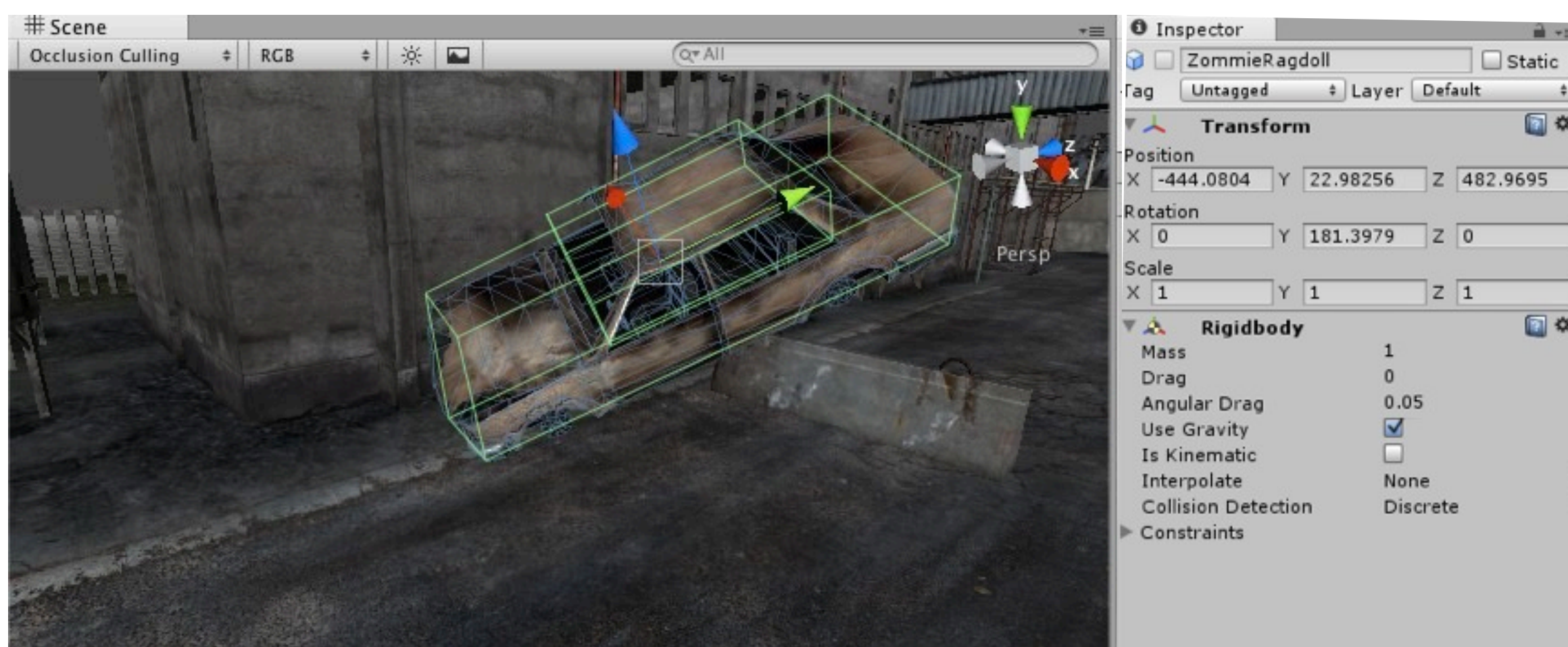
Angry Birds

Ballistik



Raft Wars

Unterschiedliche Flugbahnen bei einem [schiefen Wurf](#) ohne jegliche Reibung (Schwarz), mit [Stokes-Reibung](#) (Blau) oder mit [Newton-Reibung](#) (Grün)
<http://de.wikipedia.org/wiki/Ballistik>



Position (3 Koordinaten)

Orientierung (Rotation um 3 Raumachsen)

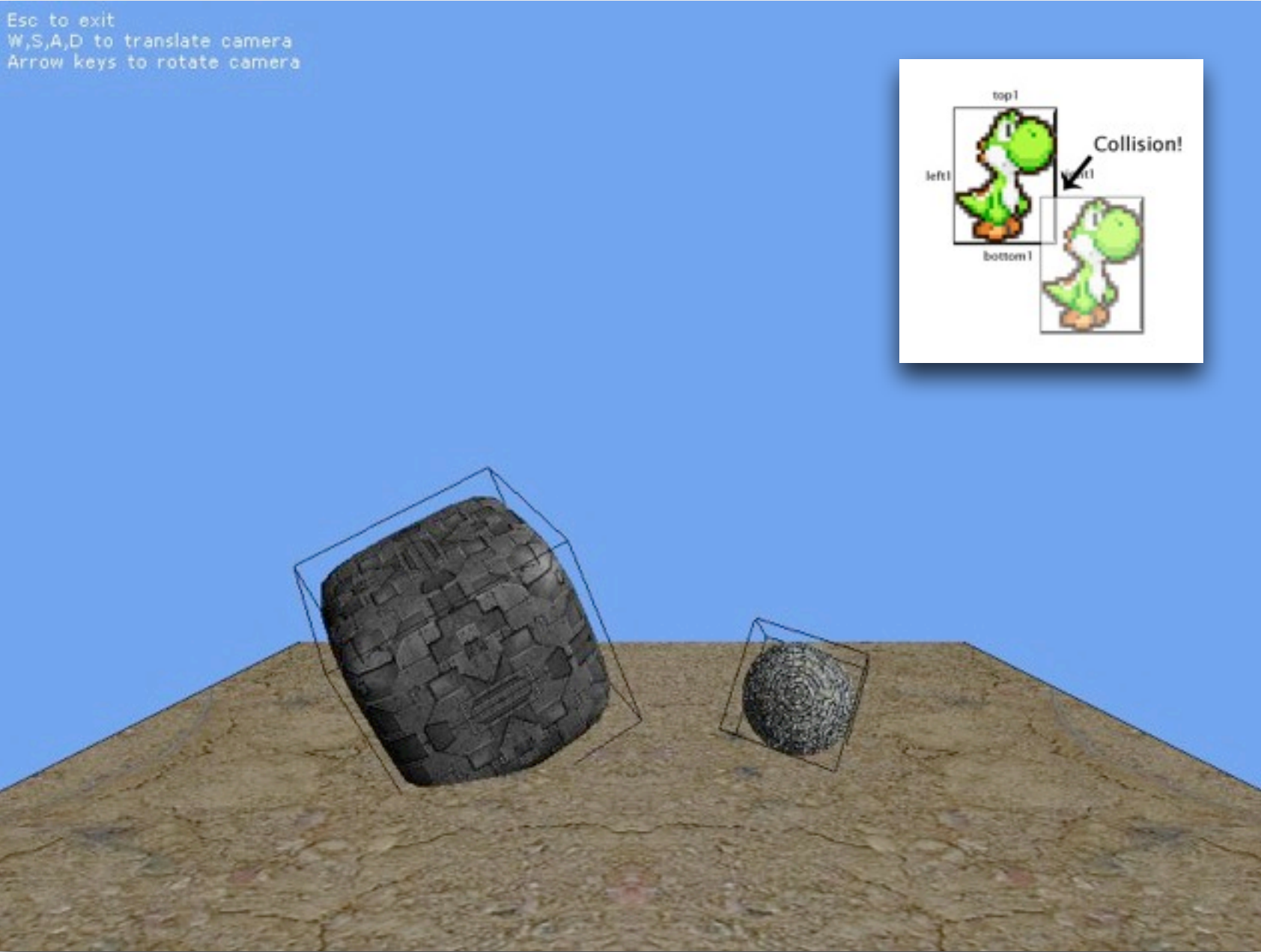
Masse

Impuls (Masse * Geschwindigkeit)

Drehimpuls (z.B. Kreisbewegung)

Festkörperphysik

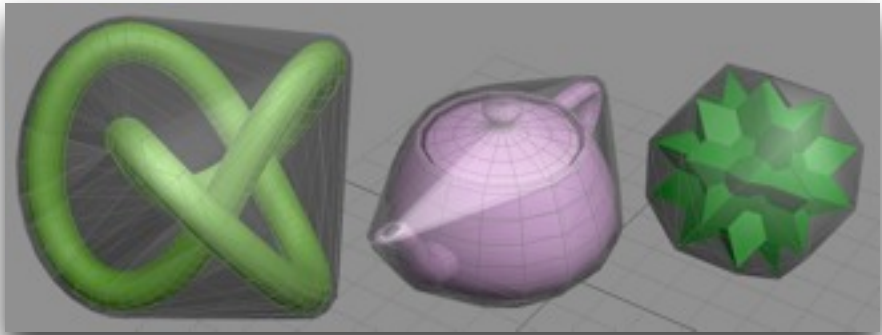
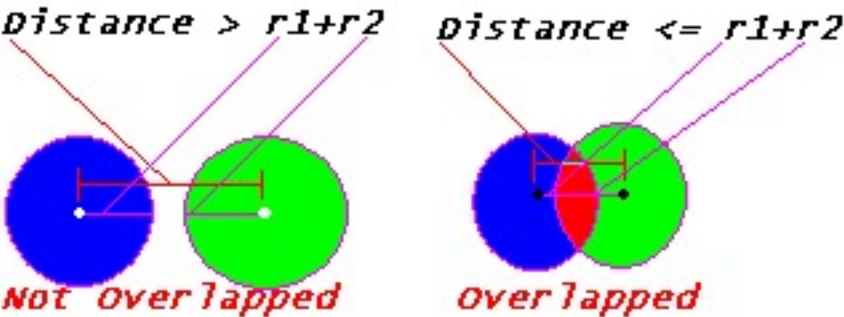
Kollisionen



Bounding Box



Bounding Circle

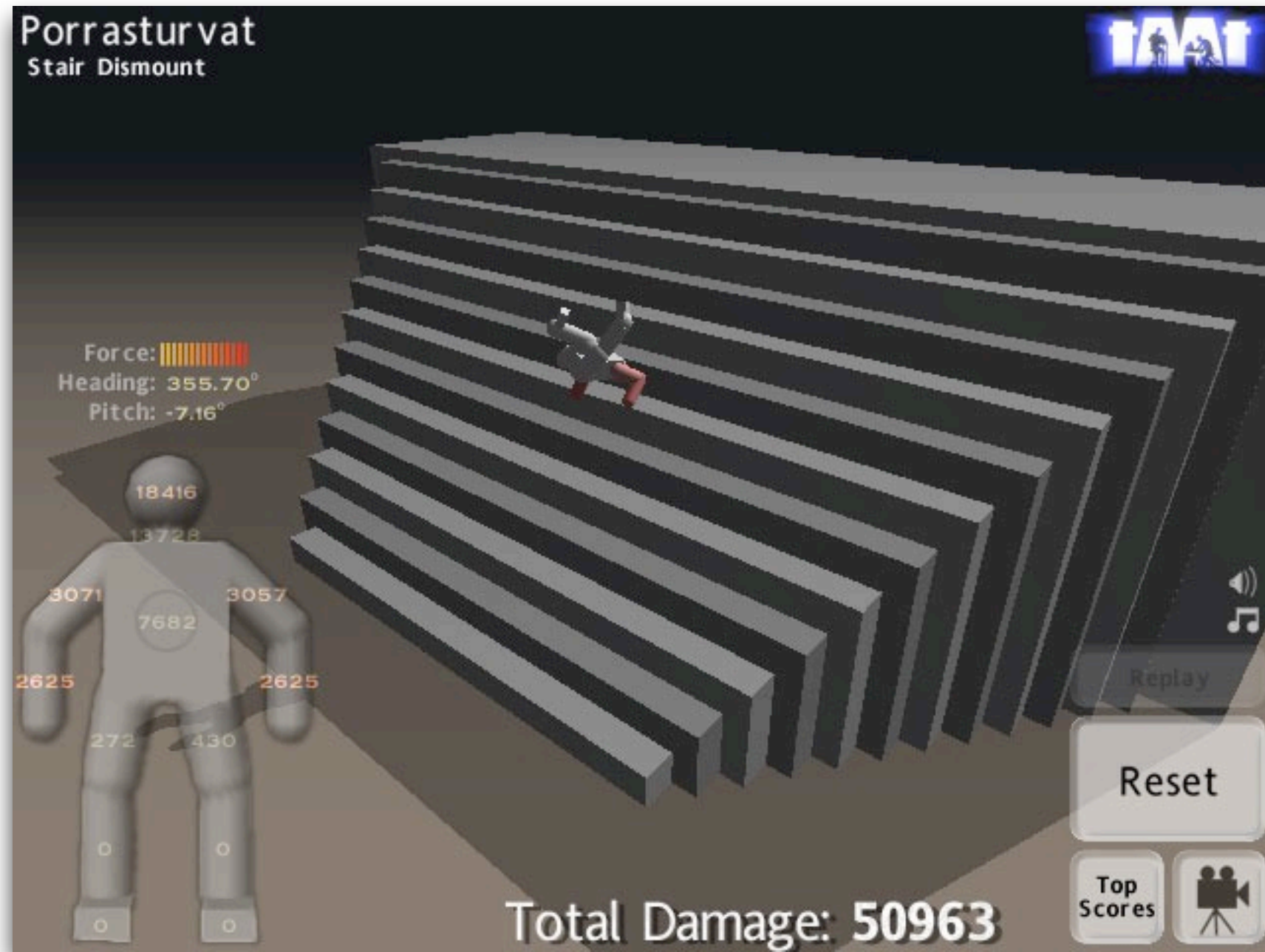


Convex Hull



Grid Based

Ragdoll Physics



Porrasturvat (Stair Dismount)

Umgebungsphysik



Realistic environmental physics

Trespasser (1998)

Ragdoll physics started here, as did the idea of physics puzzles in a shooter. You could throw objects at other objects, and they'd react in an almost-realistic way, which was pretty novel for the time.

<http://www.gamesradar.com/gamings-most-important-evolutions/?page=7>

<https://www.youtube.com/watch?v=paS665grXVY>

Fracture Physics



<https://www.youtube.com/watch?v=ATU6IGCMpUA>

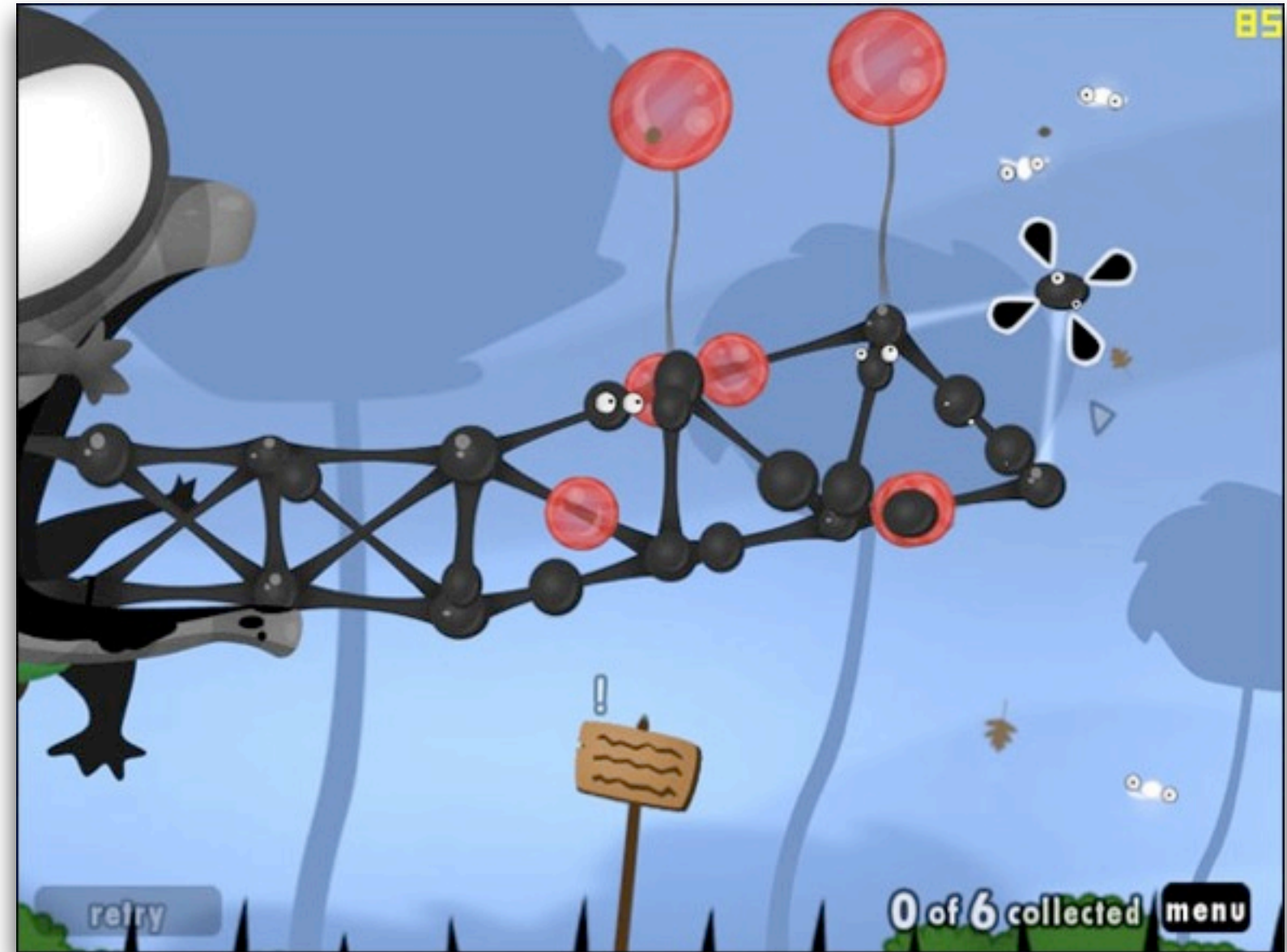
Killzone 2

Soft Body Physics

Seile und Federn

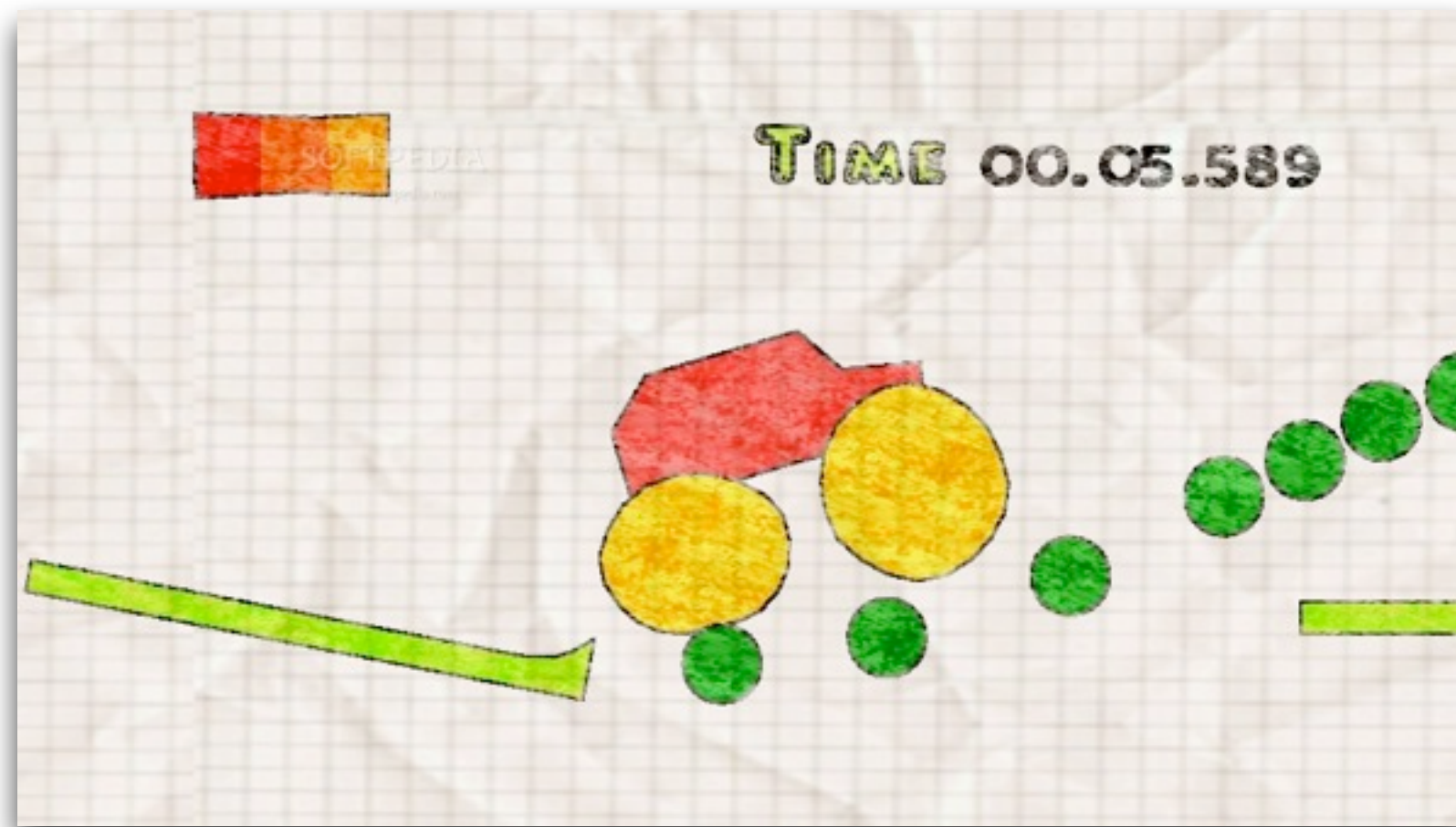


Cut the Rope



World of Goo

Oberflächenverformung

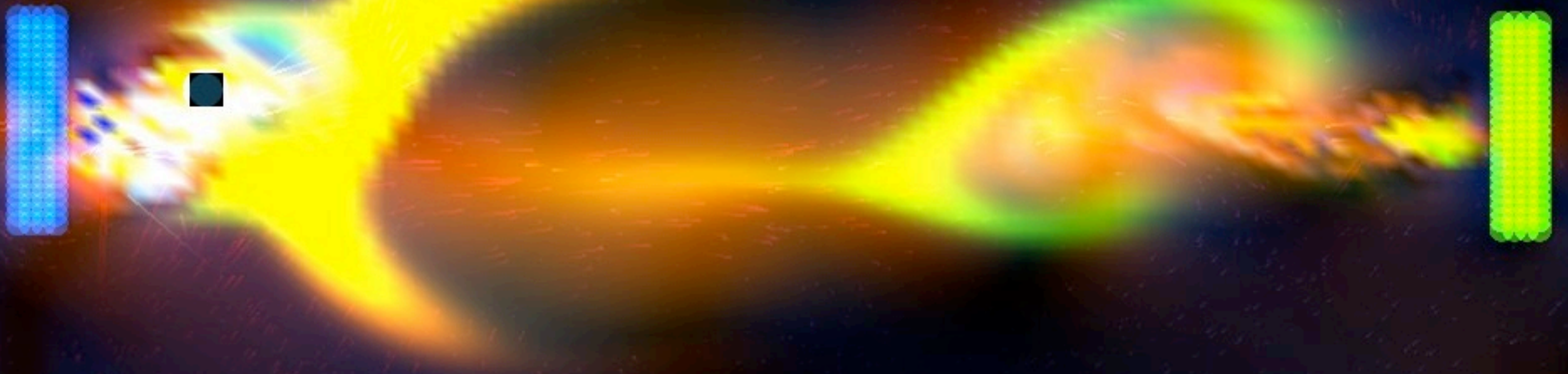


Jelly Car



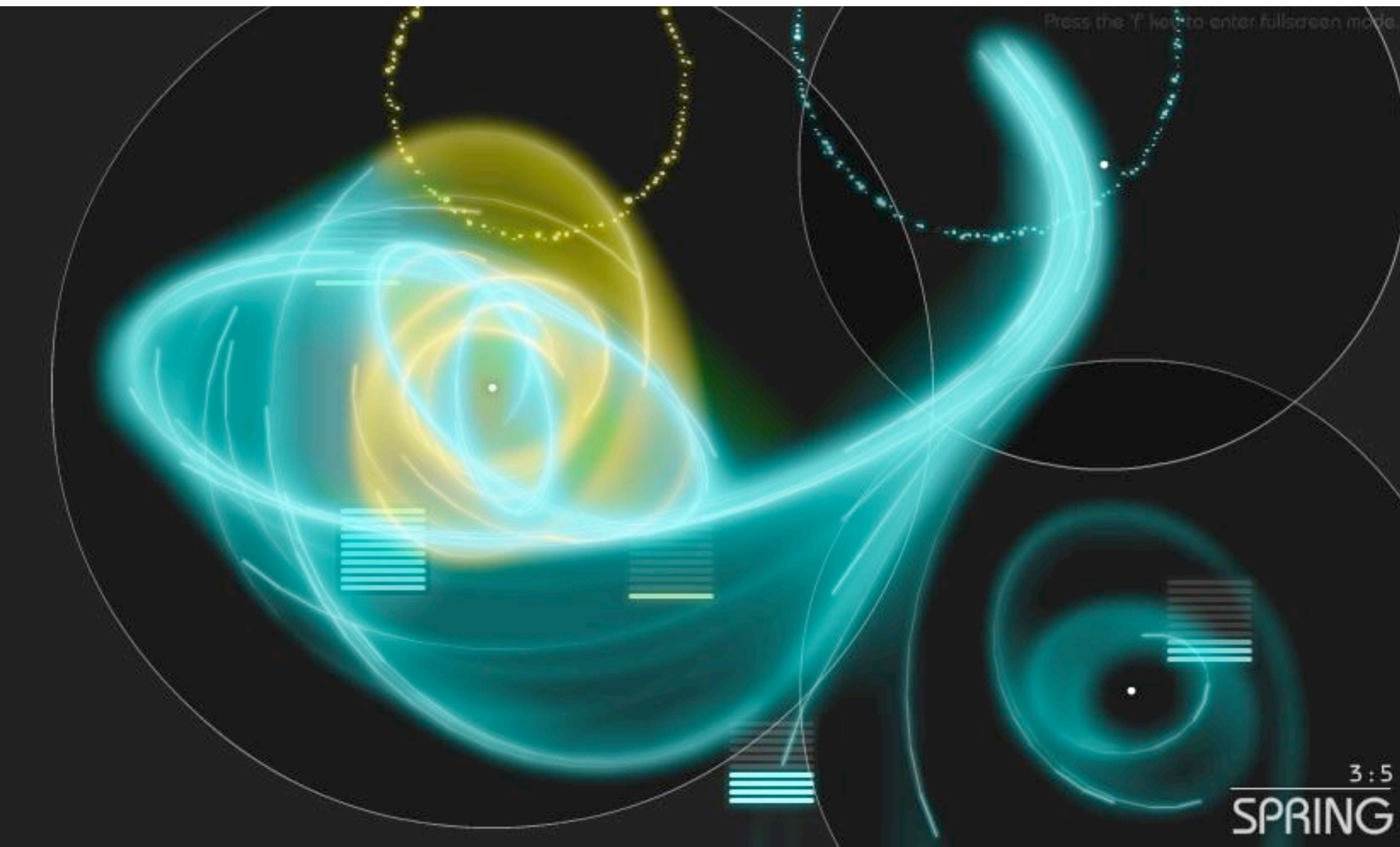
Kleidung (Cloth)

Strömungsdynamik



Plasma Pong

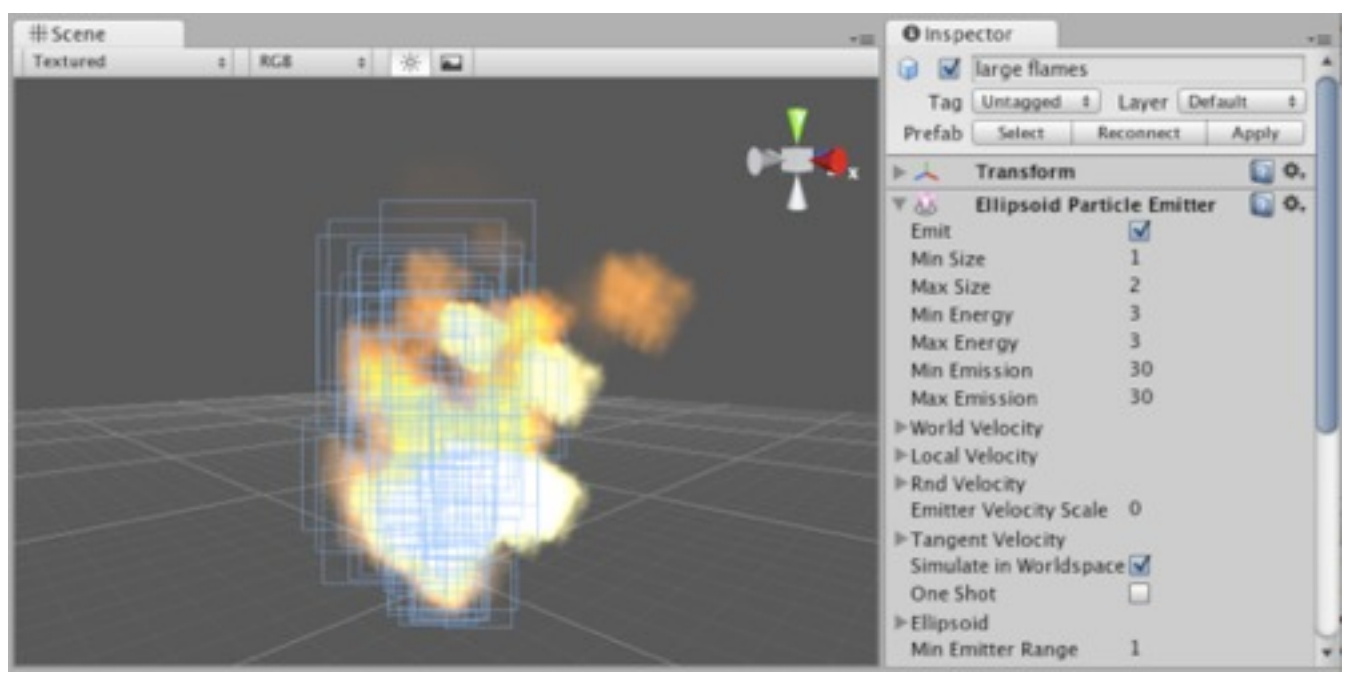
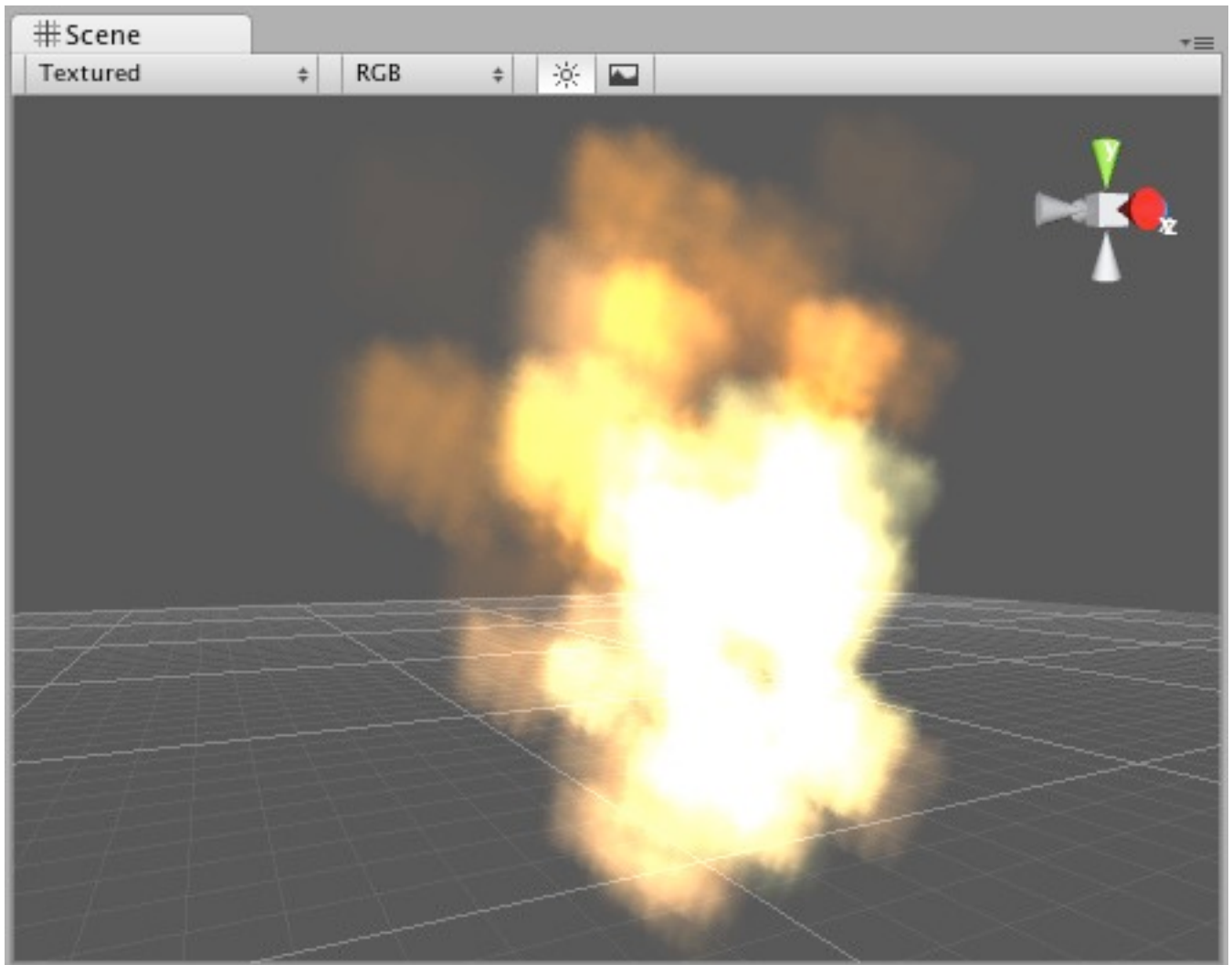
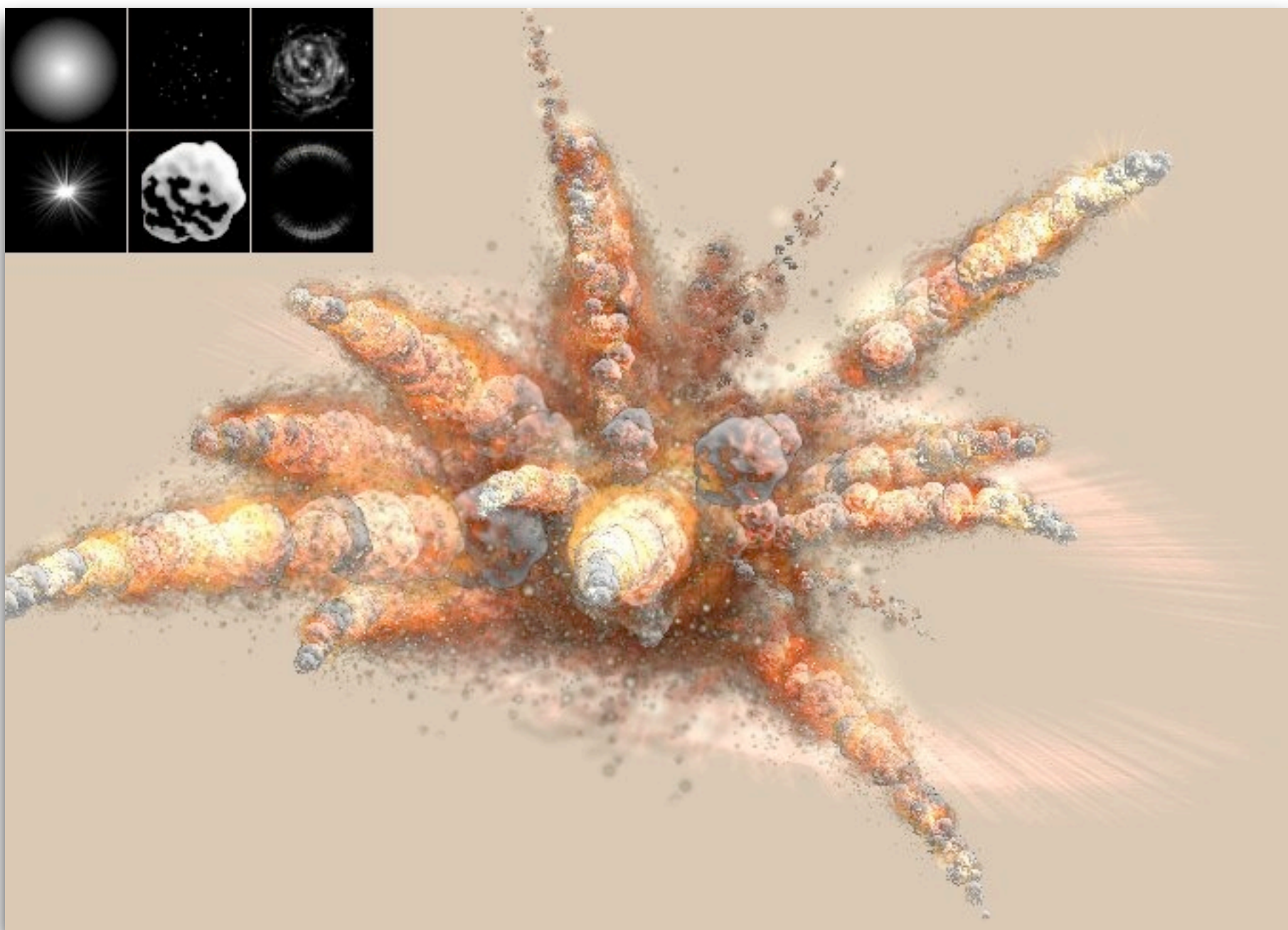
Partikelströme



<http://www.playauditorium.com/>

Auditorium

Partikel: Explosionen, Feuer



02:48

Wasseroberflächen



Crysis

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0
032
099



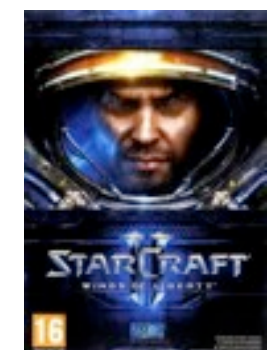
Physik Engines

PhysX[®]
by NVIDIA

<http://physxinfo.com/>



havoK[®]



Open Source Physik Engines



http://ode-wiki.org/wiki/index.php?title=Products_that_use_ODE

