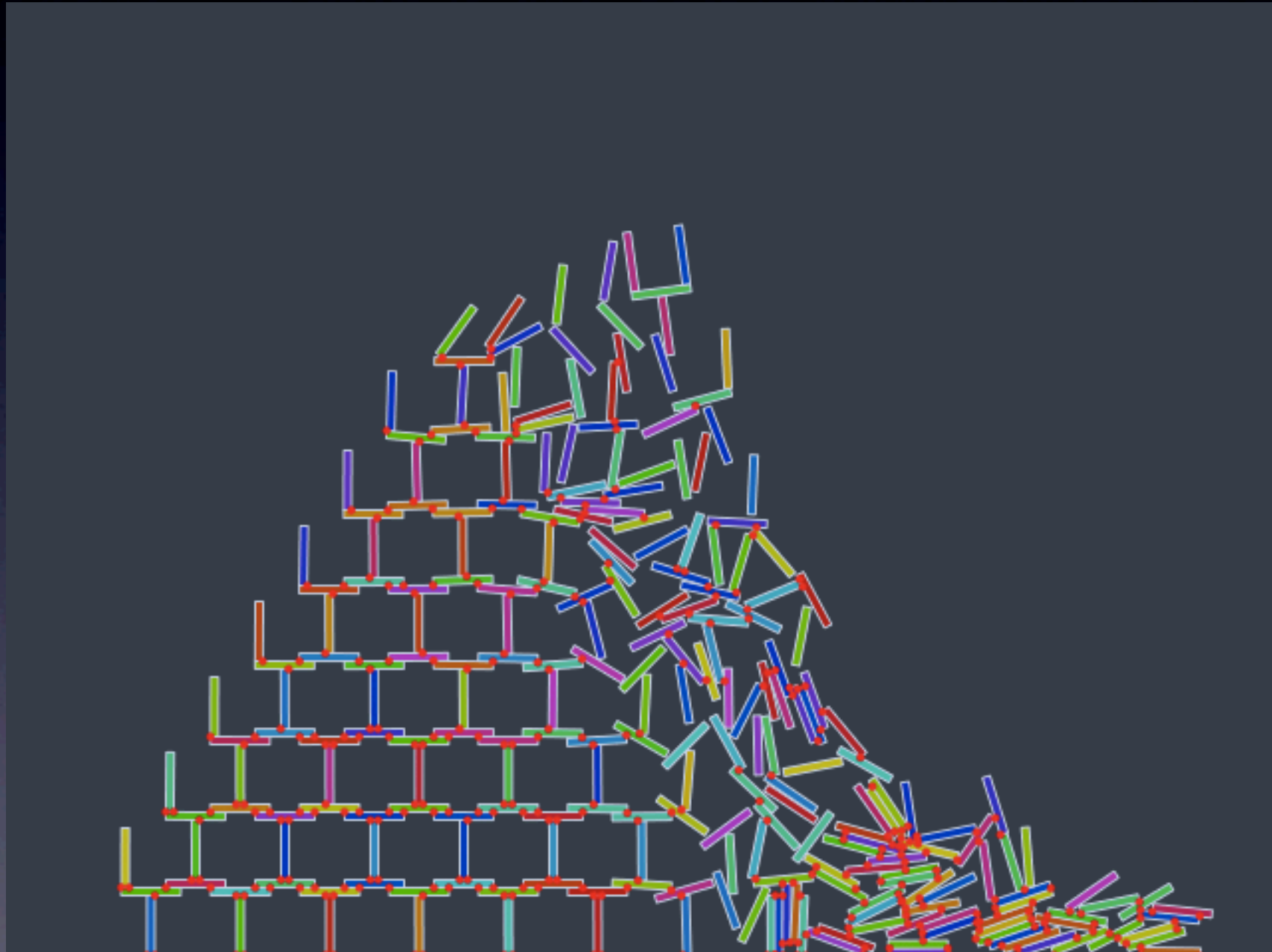


# Chipmunk Physics and Cocos2D

Scott Lembcke, Howling Moon Software

# What is Chipmunk?



# What is Chipmunk?

- Open source 2D rigid body physics engine
  - Rigid body == non-deformable shapes
  - Collision detection
  - Joints (and other constraints)
- Queries (point, raycast, etc)

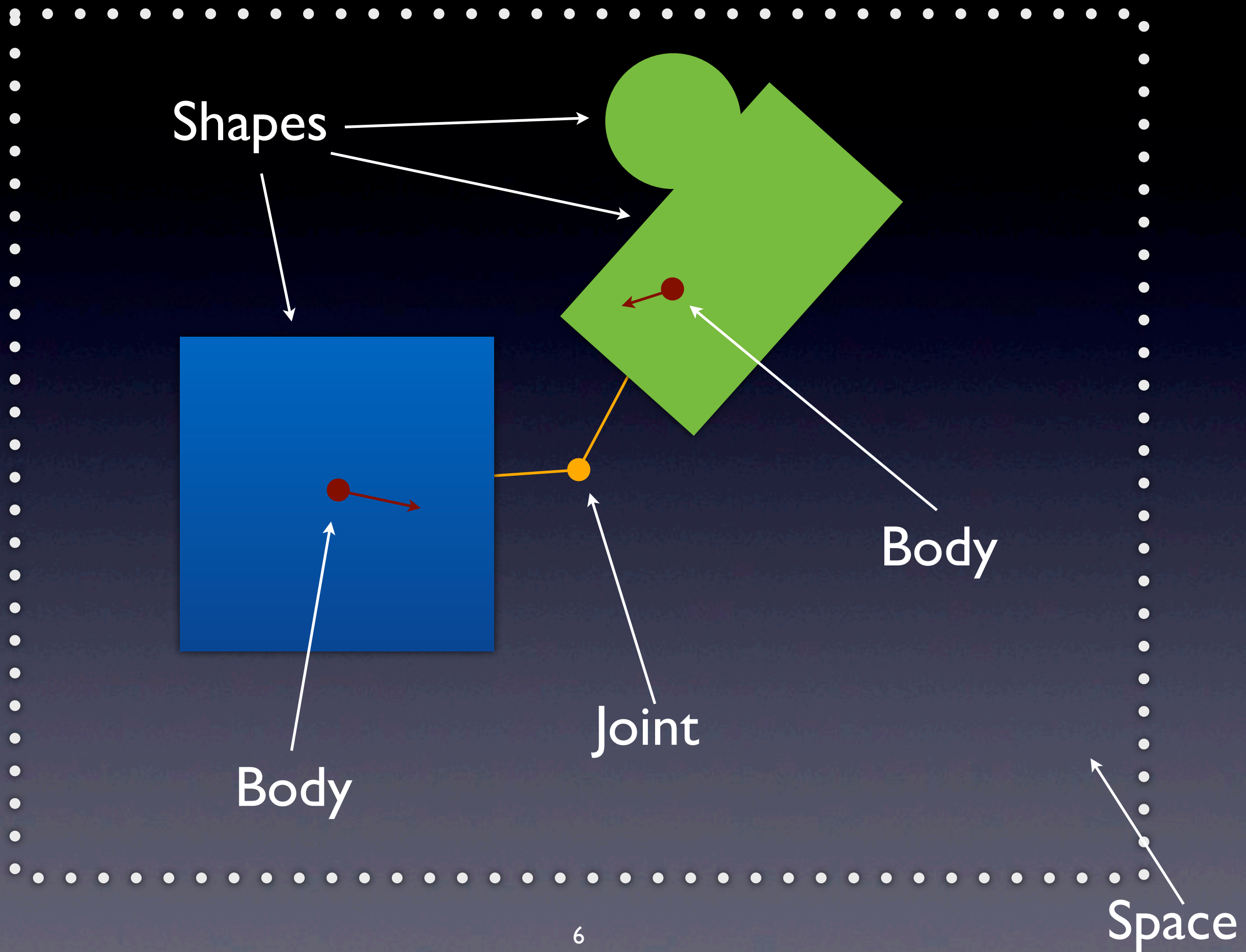


# Fancy Features

- Collision: spatial indexing, filtering, event callbacks, collision forces
- Object sleeping
- Contact graph
- Joint callbacks
- Pro features: NEON / multicore, autogeometry, Obj-C binding.

# What is Cocos2D

- Open source 2D game framework
- Scene graphs (sprites, particles, shaders, ...)
- Game states
  - Transitions, input, timers, menus
- Asset management (sounds, textures, ...)
- Popularity: tool support, cross-platform





# Chipmunk Spaces

- Global values (gravity, damping, quality, etc)
- Has lists of bodies, shapes and constraints
- `cpSpaceStep()` - updates time
- Tracks collision callbacks
- Queries (point, raycast, shape, bounds)

# Chipmunk Bodies

- Physical properties (mass, moment)
- Location/movement
  - Position, velocity, force
  - Angle, angular velocity, torque
- Has no shape or size on its own
- Can be static, dynamic or *rogue*



# Chipmunk Shapes

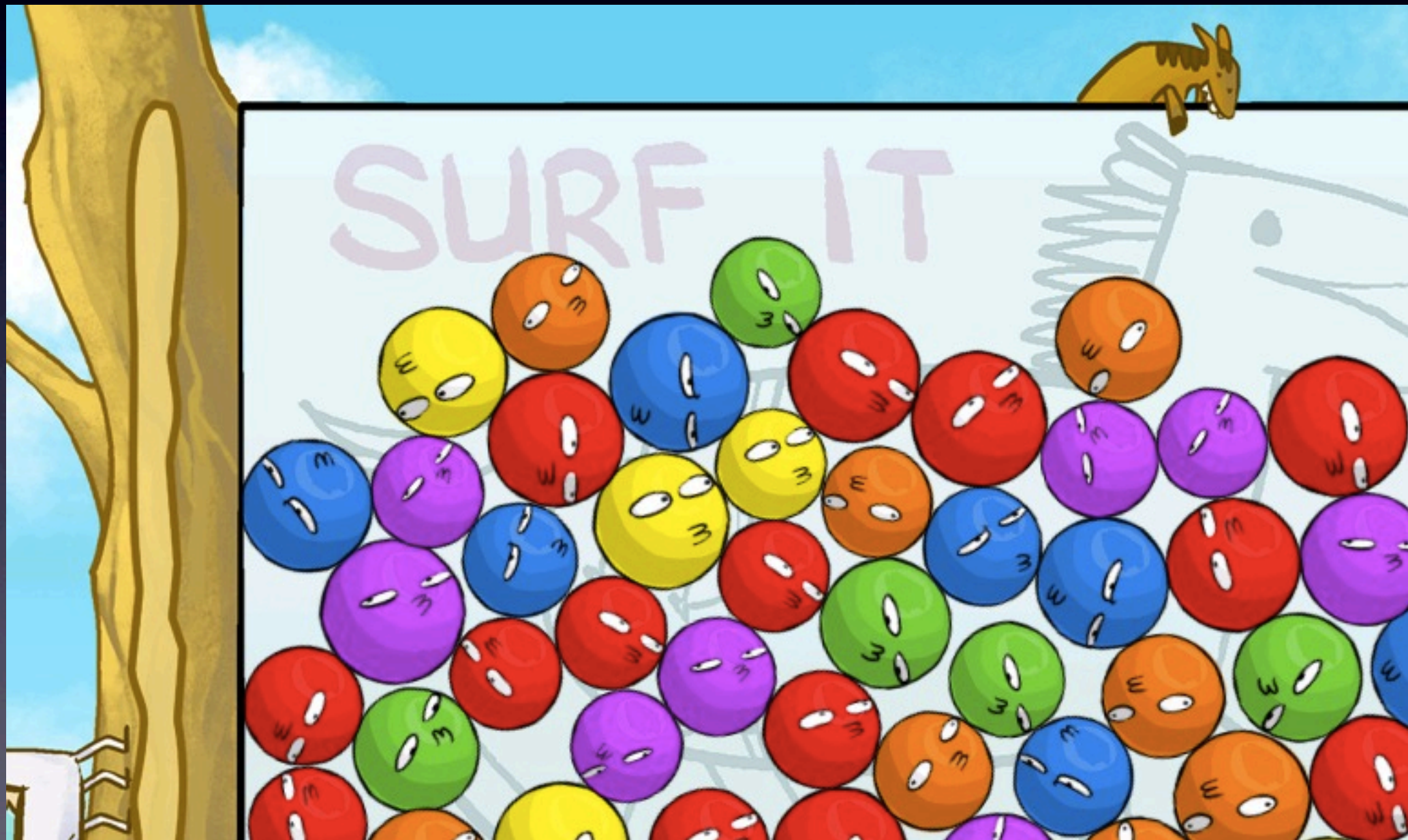
- Gives shape to rigid bodies
- Allows them to collide
- Material properties (friction, bounciness)
- Circles, line segments, convex polygons
- Multiple shapes per body allowed
- Always filled (no hollow shapes)

# Simple Matching Game

- Ignore scoring logic
- Basic mechanics:
  - Match groups of 4 - *collision callbacks*
  - Tap a ball to remove it - *queries*
- Horses!



# Code Time!





# Fixed Time Steps

- Not required, but a *really* good idea
- “Fix your timestep” - [gafferongames.com](http://gafferongames.com)



# Get the Source Code

[github.com/slembcke/ChipmunkColorMatch](https://github.com/slembcke/ChipmunkColorMatch)