



JS Gaming Physics - Part 1

Roy Pearl

Lecture Prerequisites

1. Basic (JS) scripting skills
2. Passion to game-like development
3. `<canvas>` knowledge
4. Physics foundations

Concept cloud

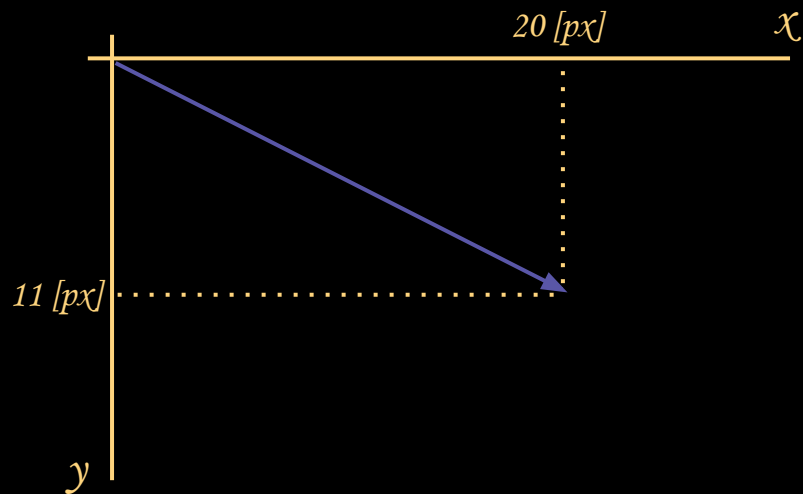
elastic motion
position
velocity
collisions
throwing
timing
acceleration
IK
energy absorption
particles
easing
friction
Rigid Body
mouse
orientation
keyboard
performance

Topics

1. Theory
2. EaselJS - Basics Movement
3. EaselJS - Basic Interaction
4. In a Nutshell: Particles and Optimization
5. Questions
6. Break

Kinematics - concepts

Position



1. Theory

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Time

1 Time Unit = 1 Clock Tick

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Kinematics - concepts

Velocity

$$\vec{v} = \frac{\partial x}{\partial t} \hat{x} + \frac{\partial y}{\partial t} \hat{y}$$

$$v_x = x_1 - x_0 = \Delta x$$

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Kinematics - concepts

Acceleration

$$a_x = \frac{\partial v}{\delta t}$$

$$a_x = v_1 - v_0$$

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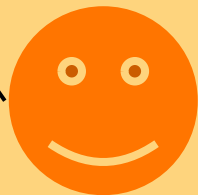
keyboard

performance

Easel JS - Object Hierarchy

`<canvas> [DOM]`

Stage (easel js)



graphics

1. Theory

2. EaselJS -
Basics Movement

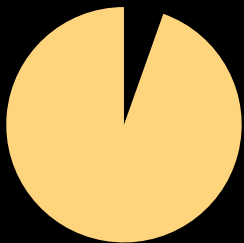
3. EaselJS - Basic
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Easel JS - Object Hierarchy



Ticker



`<canvas> [DOM]`

Stage (easel js)

Shape_!



Shape_'



graphics

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Easel JS - Start Moving!

Examples

1. Inertic Movement
2. Accelerated Movement - 1D
3. Energy Absorption (collisions)
4. Accelerated Movement - 2D
5. Friction

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Easel JS - Start Playing!

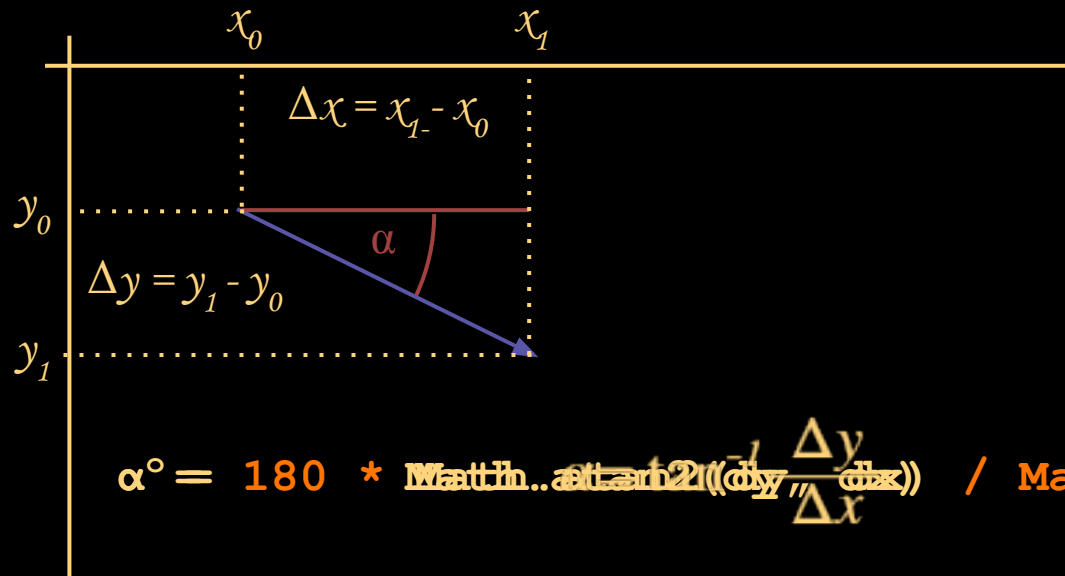
Examples

1. Mouse Drag and Drop
2. Easing
3. Orientation

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Orientation



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Easel JS - Start Playing!

Orientation

Live Example

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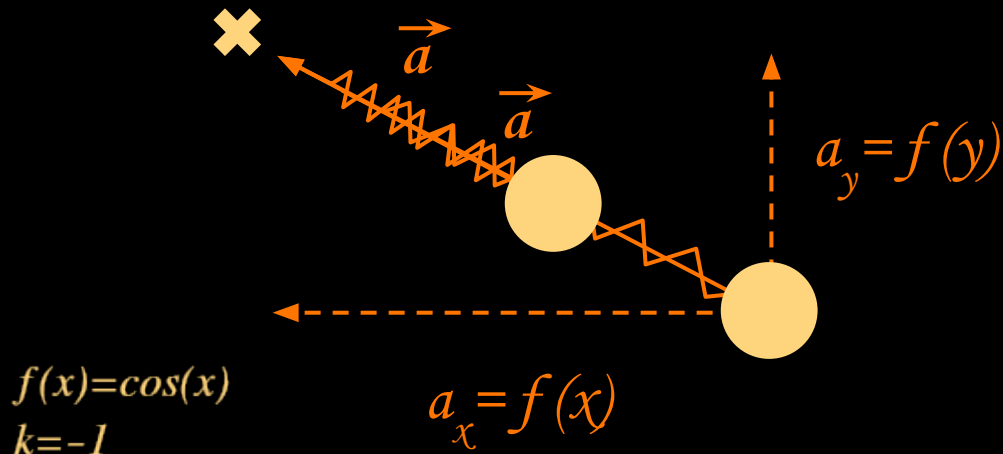
Examples

1. Mouse Drag and Drop
2. Easing
3. Orientation
4. Elastic Movement

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Easel JS - Start Playing!

Harmonic Motion (Elastic)



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Harmonic Motion (Elastic)

Live Example

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Easel JS - Start Playing!

Examples

1. Mouse Drag and Drop
2. Easing
3. Orientation
4. Elastic Movement
5. Throwing

<http://roxik.com/ecodazoo/>

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Particle System

1. Emitter
2. Dynamics
3. Life Cycle
4. Performance optimization

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Questions?

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