JAVA PHYSICS ENGINE

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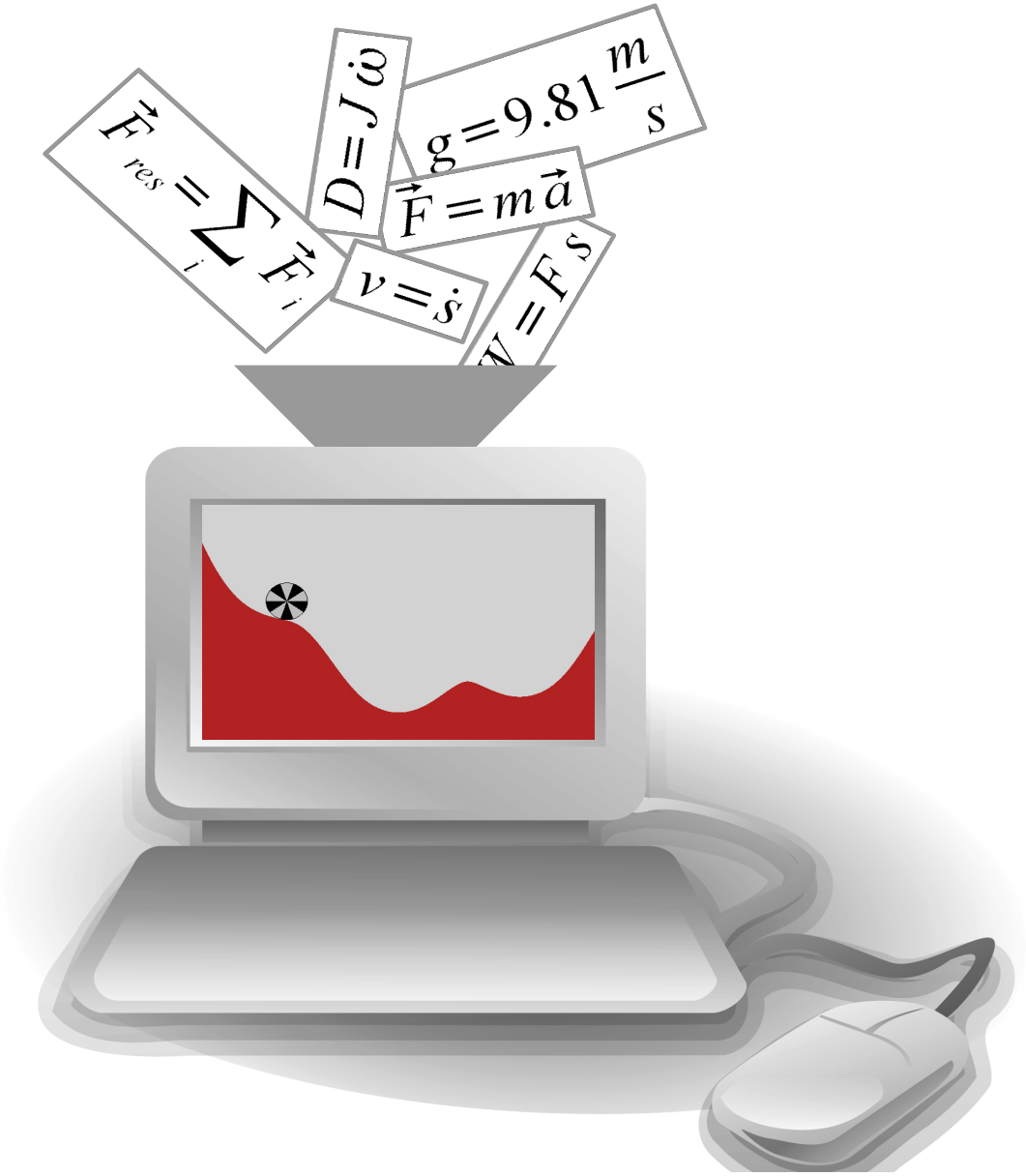
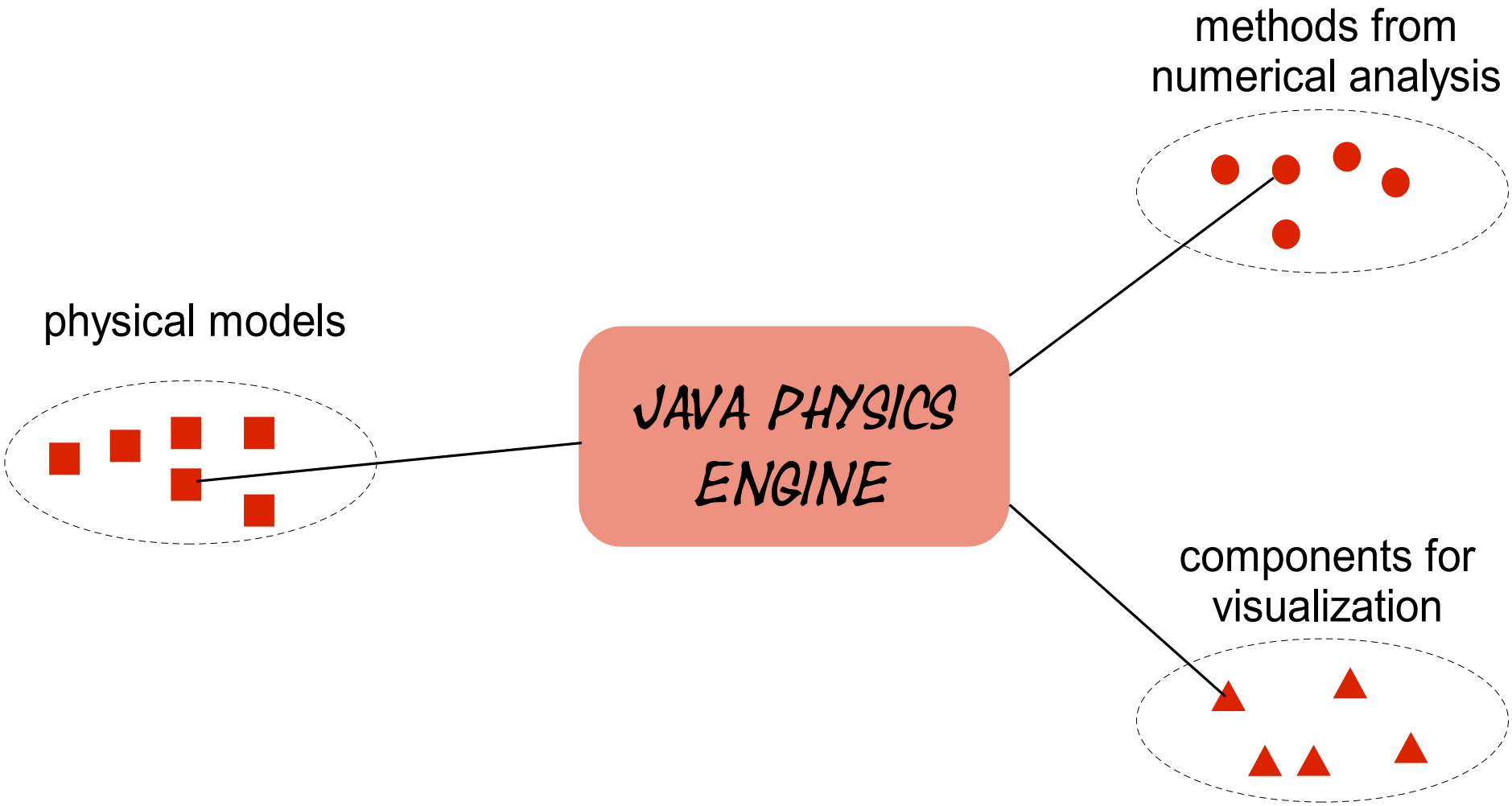
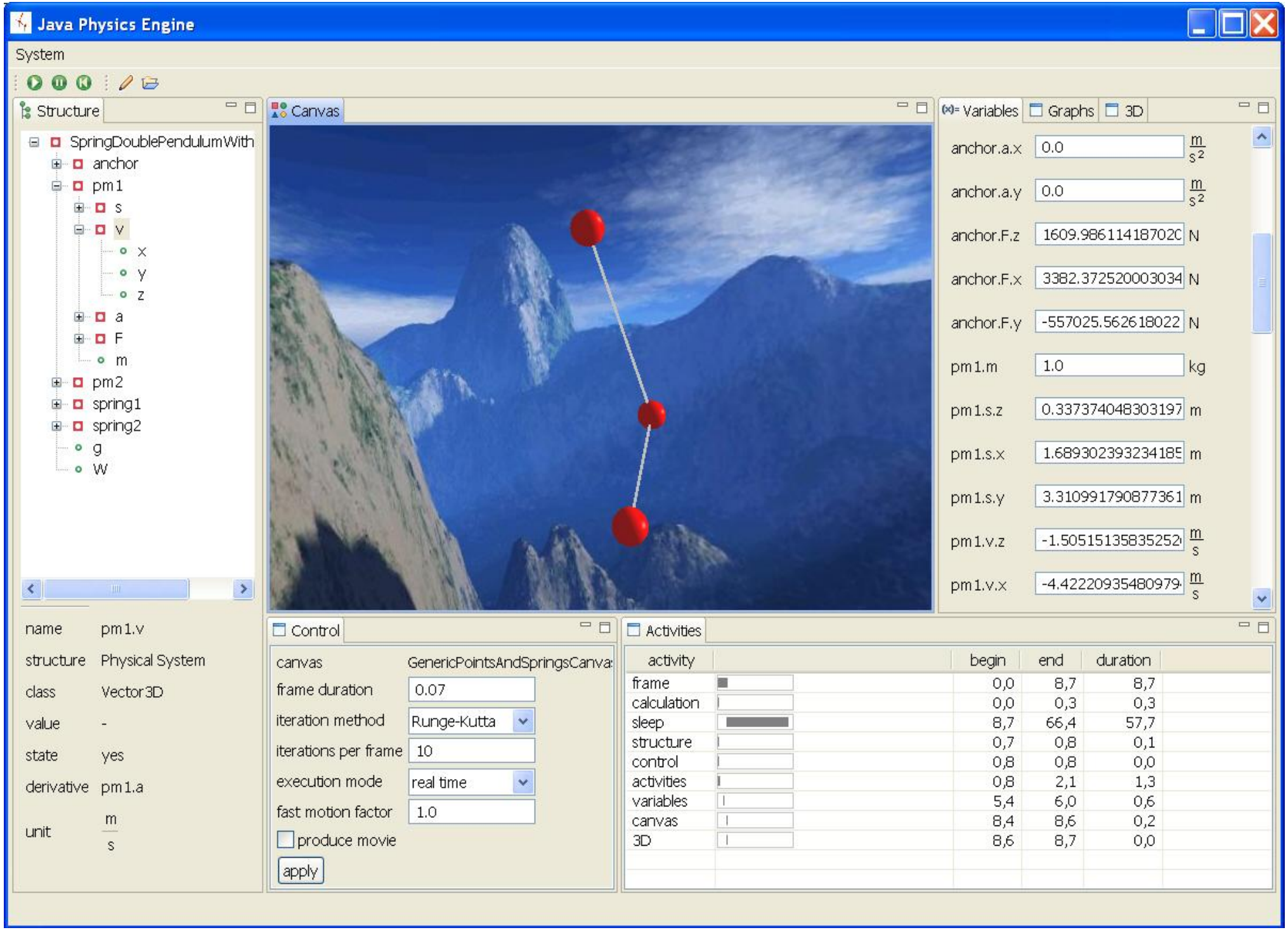
Heidelberg Innovation Forum

Formulas in Motion

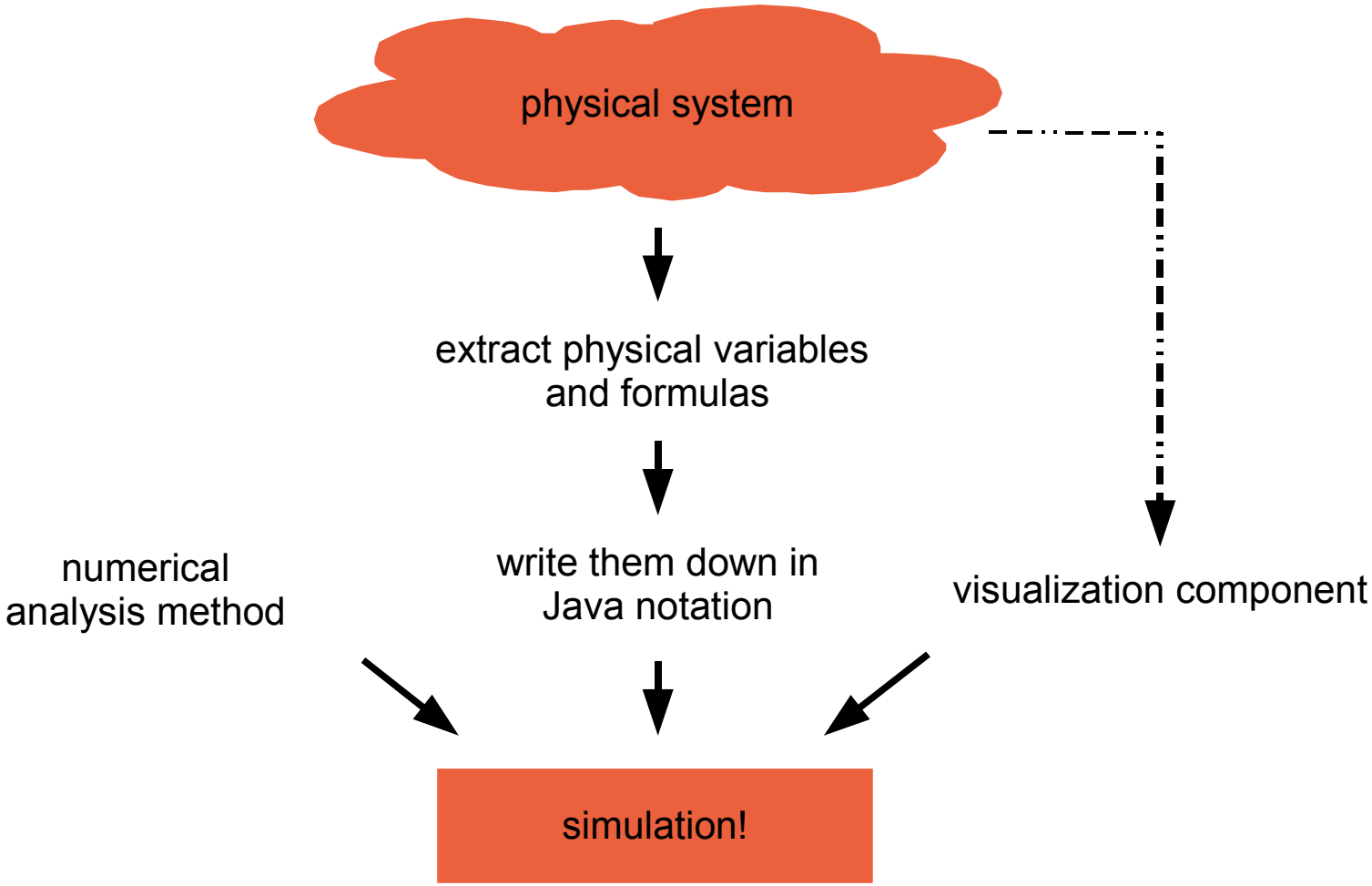


Physical Simulation




Java Physics Engine
System
Structure
SpringDoublePendulumWith
anchor
pm1
s
v
x
y
z
a
F
m
pm2
spring1
spring2
g
W
name pm1.v
structure Physical System
class Vector3D
value -
state yes
derivative pm1.a
unit m/s
Canvas
Variables
Graphs
3D
anchor.a.x 0.0 m/s²
anchor.a.y 0.0 m/s²
anchor.F.z 1609.986114187020 N
anchor.F.x 3382.372520003034 N
anchor.F.y -557025.562618022 N
pm1.m 1.0 kg
pm1.s.z 0.337374048303197 m
pm1.s.x 1.689302393234185 m
pm1.s.y 3.310991790877361 m
pm1.v.z -1.50515135835252 m/s
pm1.v.x -4.42220935480979 m/s
Control
canvas GenericPointsAndSpringsCanva
frame duration 0.07
iteration method Runge-Kutta
iterations per frame 10
execution mode real time
fast motion factor 1.0
produce movie
apply
Activities
activity begin end duration
frame 0,0 8,7 8,7
calculation 0,0 0,3 0,3
sleep 8,7 66,4 57,7
structure 0,7 0,8 0,1
control 0,8 0,8 0,0
activities 0,8 2,1 1,3
variables 5,4 6,0 0,6
canvas 8,4 8,6 0,2
3D 8,6 8,7 0,0

Get Your Physical System Running!



Technologies Involved

cross platform compatibility

Java

object oriented framework

Annotations

modular desktop applications

Eclipse RCP

fast 3D graphics

Open GL

MPEG encoder

turn your simulation into a movie

JMonkeyEngine

game engine

real time

Who Should Use It?

Teaching

play with physical models

variables

formulas

build your own model

programming

Research

Does your theoretical model match reality?

explain complex concepts visually

communication with experts

with amateurs

Industry

theoretical model for your product

optimization *enhancements*

explain complex products visually

customer *advertising*

Wanted: Sales Partner

tasks

- sales and distribution
- customer care
- marketing
- web portal

time line

- 3/2010 cooperation offering for scientific partners
- 6/2010 distribute first beta
- 10/2010 product availability

THANK YOU FOR YOUR ATTENTION!