

Supplement to *Active physical inference via reinforcement learning*: Physics simulation set up

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We used a standard open source 2-D physics simulator [Box2D](https://github.com/erincatto/Box2D). Source code is available at <https://github.com/erincatto/Box2D>. The simulator is originally written in C but to integrate it with our modelling framework, we used a Python port (<https://github.com/pybox2d/pybox2d>) of the engine.

Table 1 illustrates the settings for the 2-D physics simulator used in our learning experiments.

Table 1: Simulator settings

Parameter	Value
N frames	960
Trial length	16s
Box2D step size	1/60s ($\approx 17ms$)
Step size per action	40/60s ($\approx 0.7s$)
Pixels to meters	100
Starting velocities	(x, y) drawn from $\text{Unif}(-2, 2) \text{ m/s}$
World width	6m (600 pixels)
World height	4m (400 pixels)
Mouse moving range	$[0.25, 3.75]m \times [0.25, 5.75]m$
Attractive forces	$+3 \text{ m/s}^2$
Repulsive forces	-3 m/s^2
Controlled object attraction cursor	$.2 \times \text{dist}(\text{cursor}, \text{object}) \text{ m/s}^2$
Controlled object damping	10
Puck masses	1kg, 2kg, 3kg
Puck friction	.05
Puck elasticity	.98
Puck damping	.05
Puck radius	0.25 m
Puck object types	Dynamic
Wall mass	n/a
Wall friction	.05
Wall elasticity	.98
Wall damping	n/a
Wall width	0.2m
Wall object types	Static