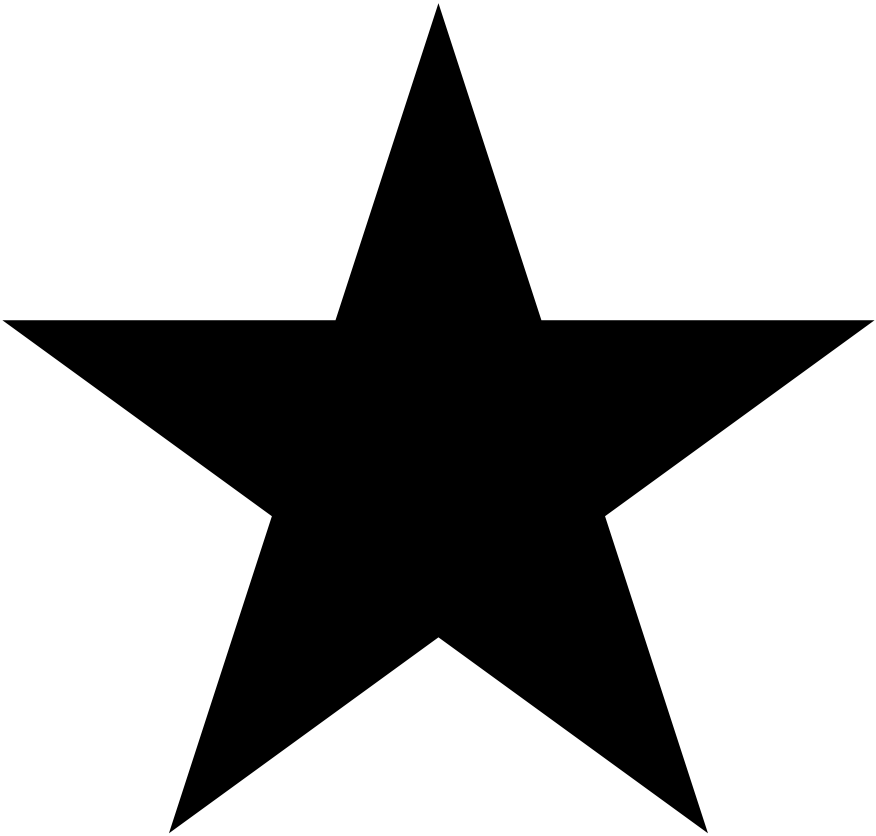
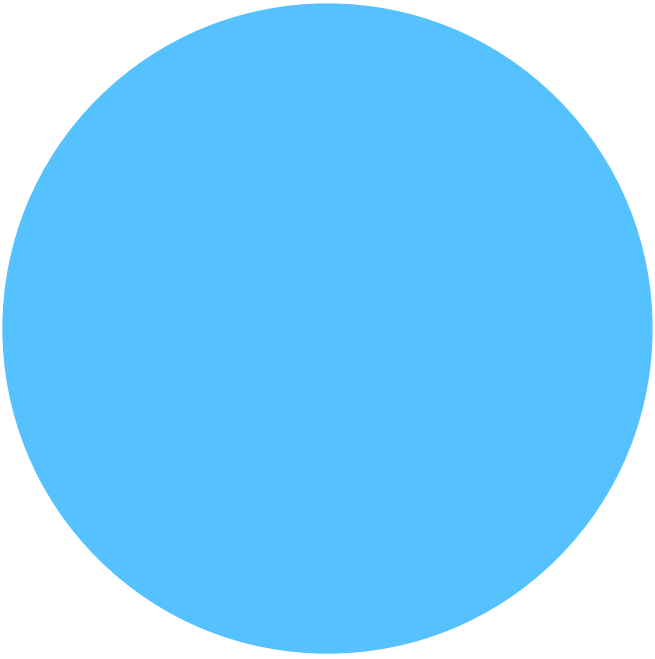
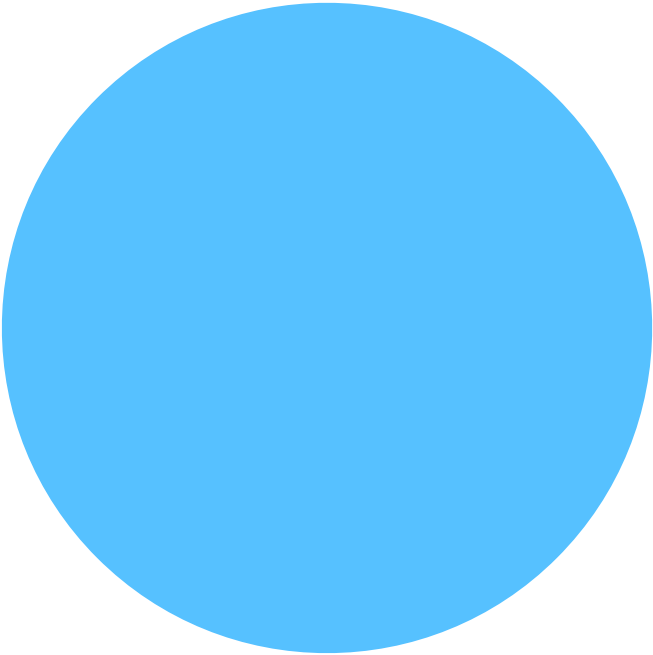
Shooting Methods

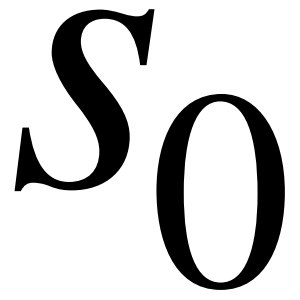
Illustration

22





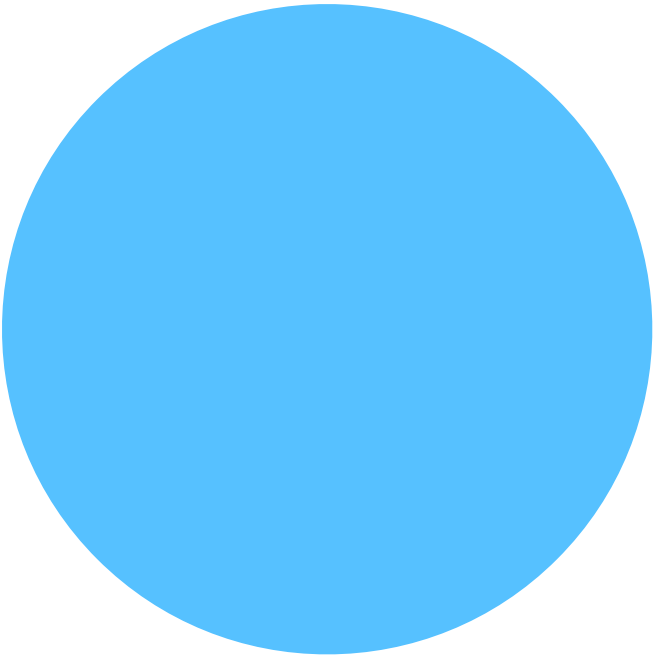


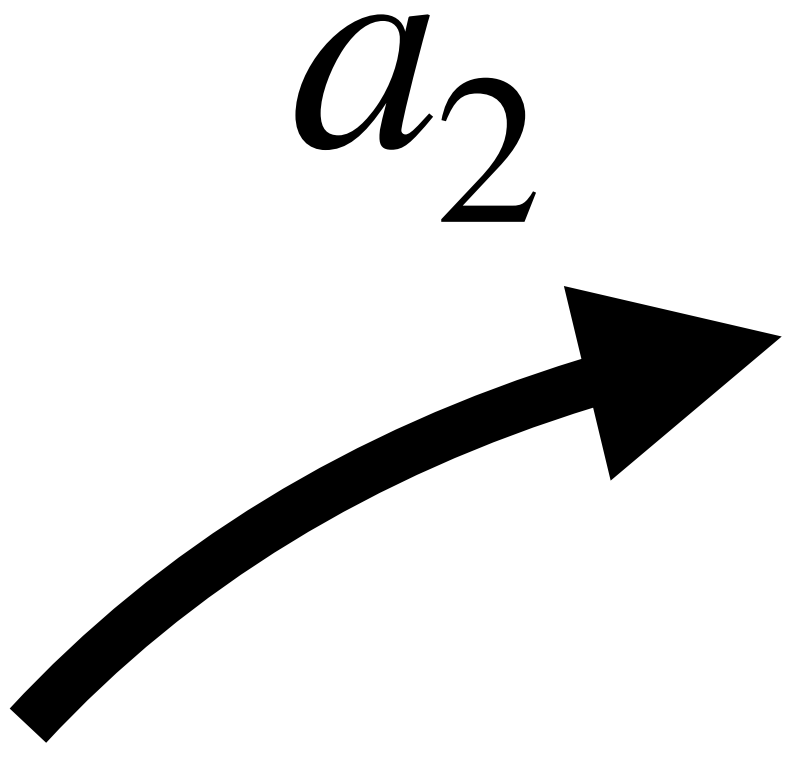


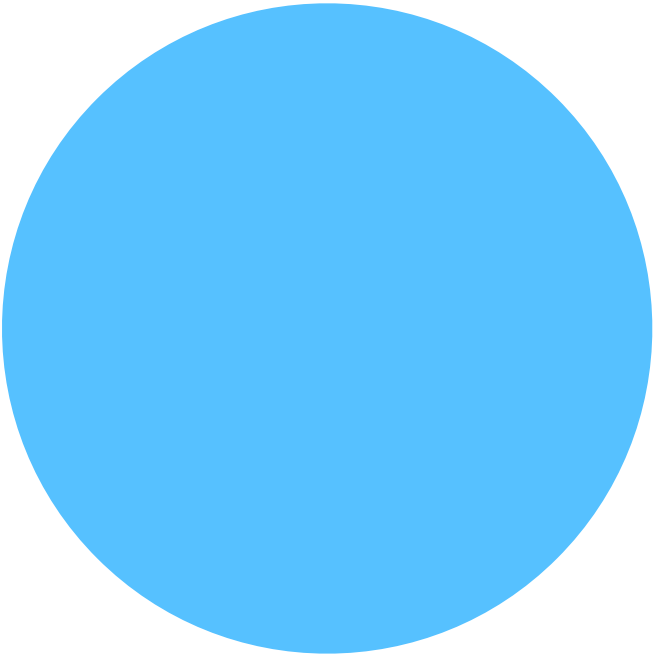
a_0

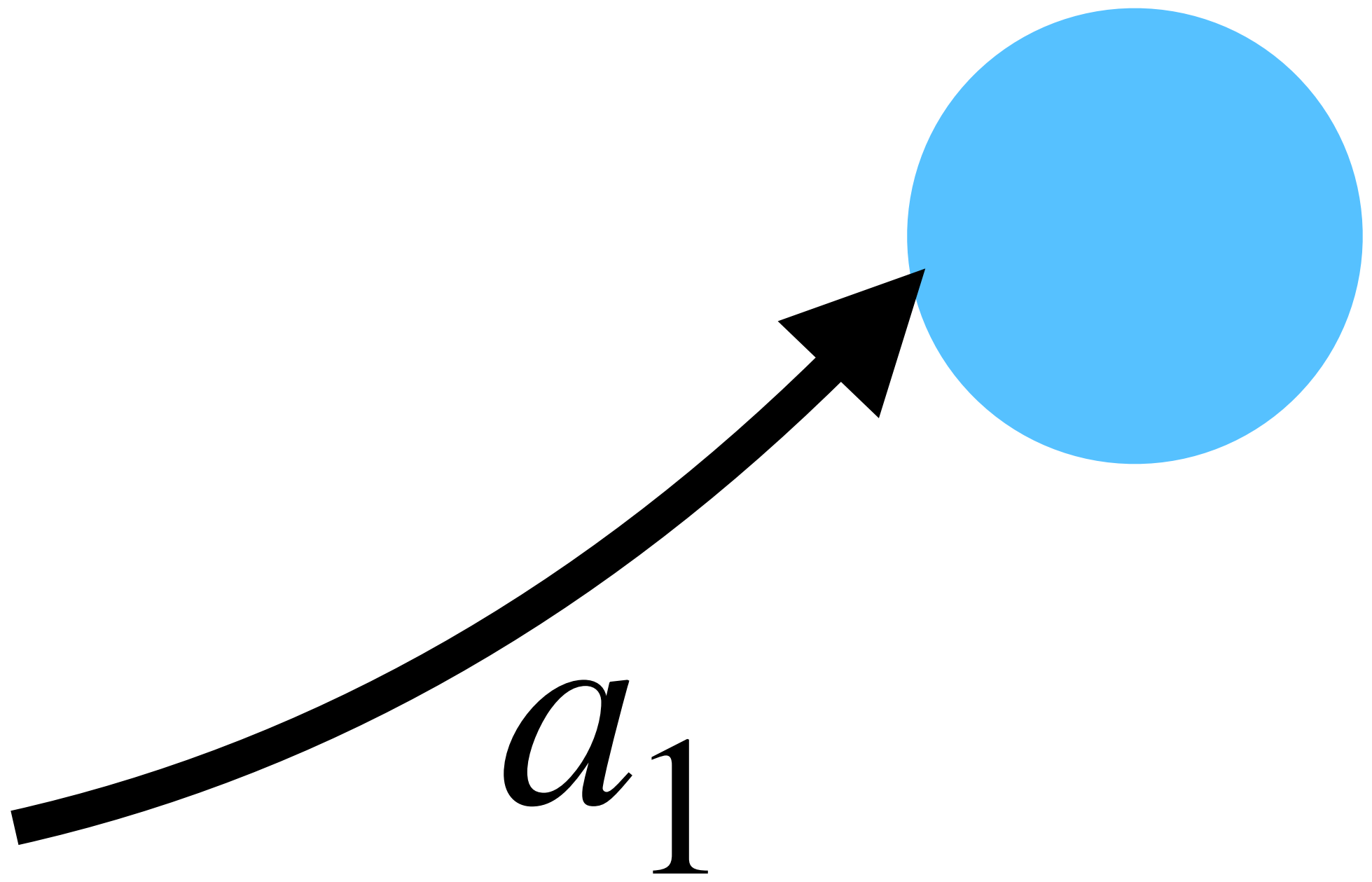
a_3

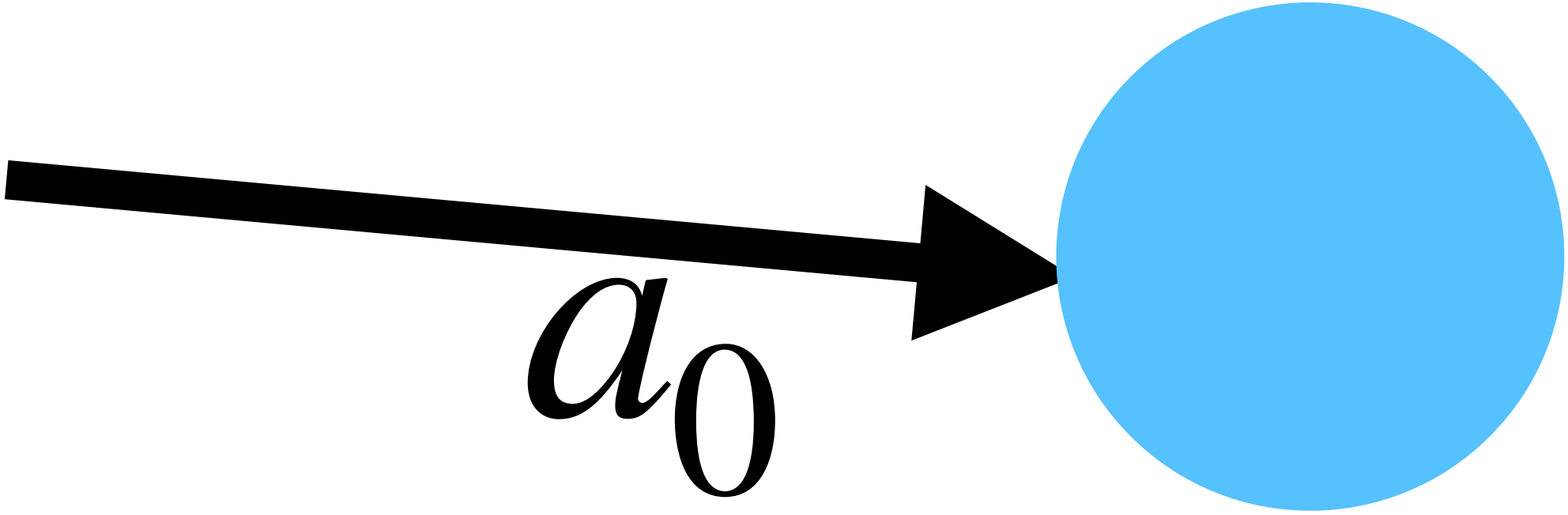
a_1

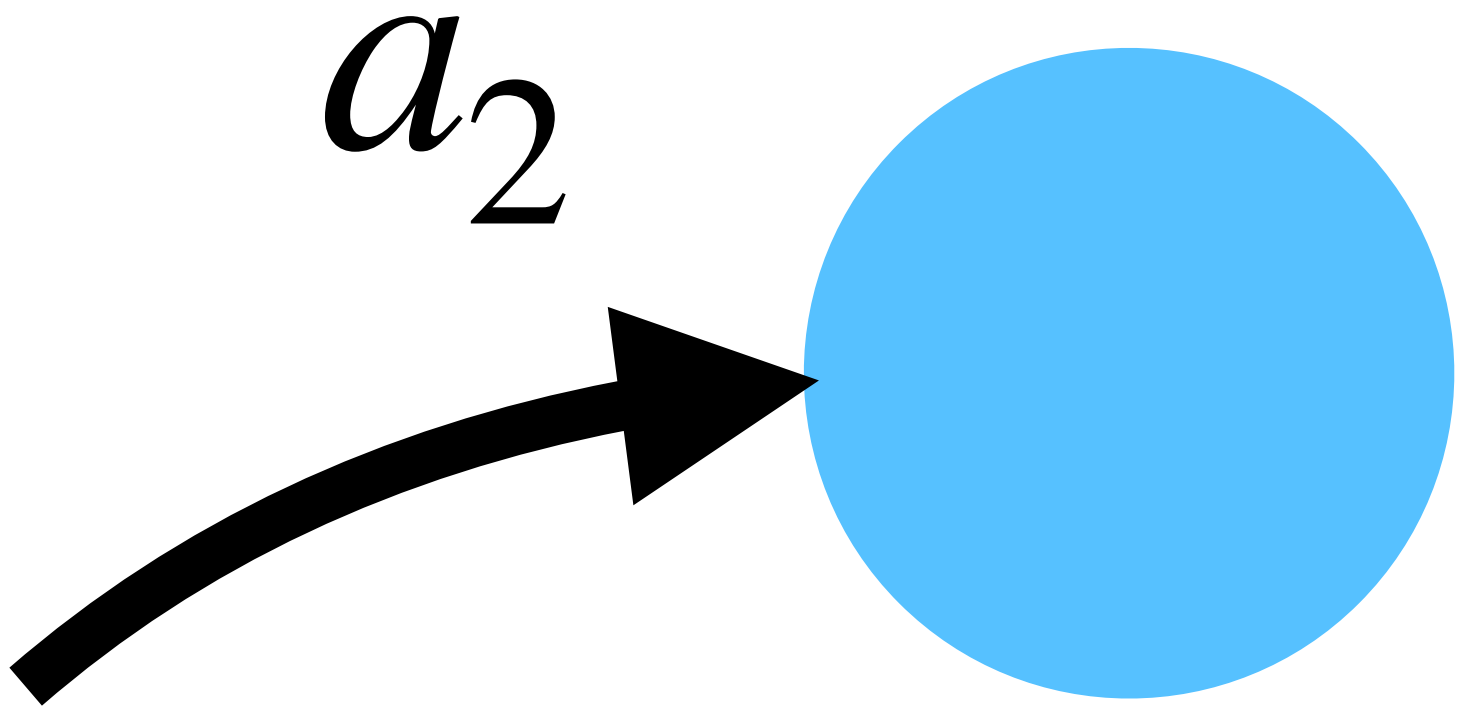


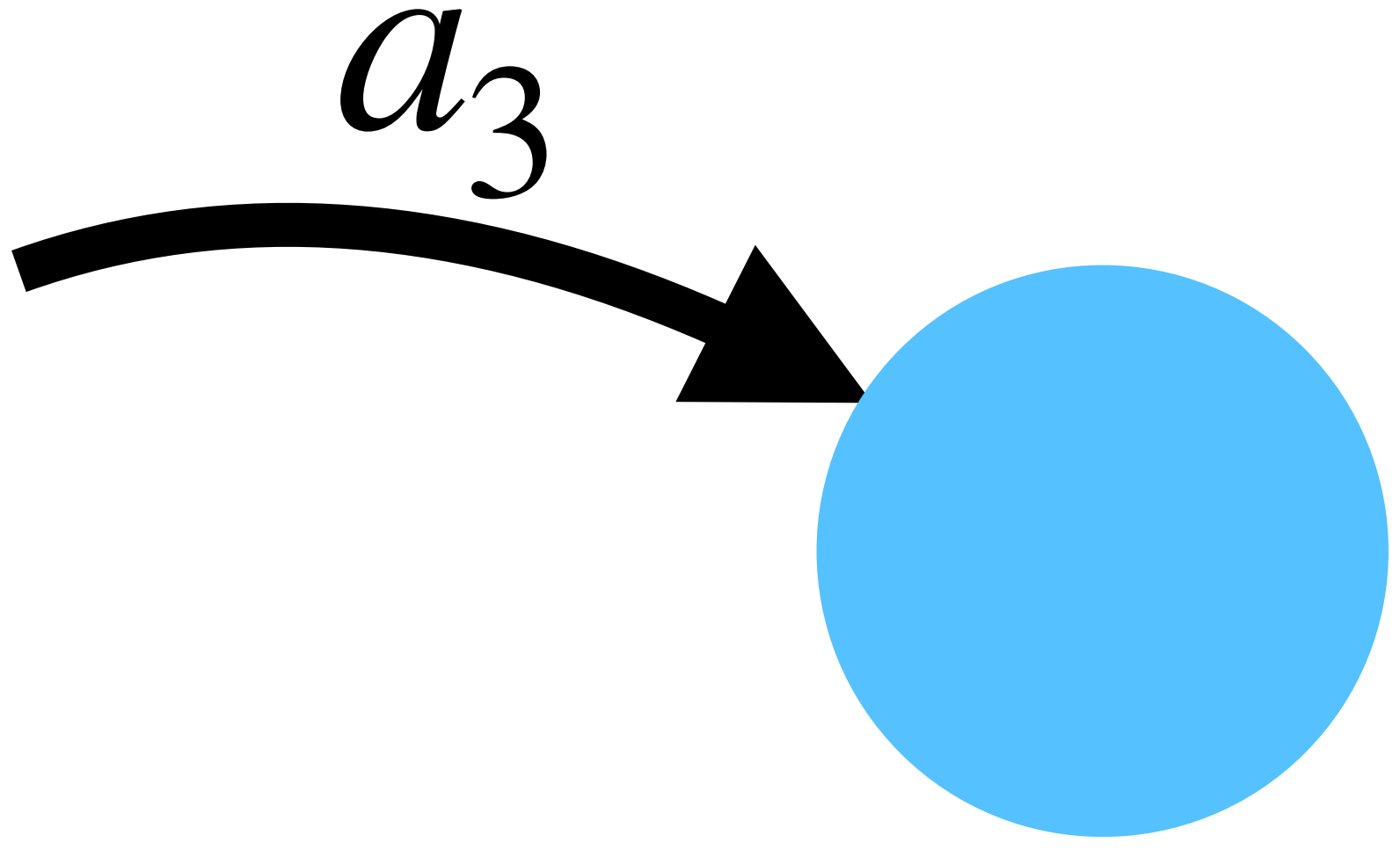

a_2

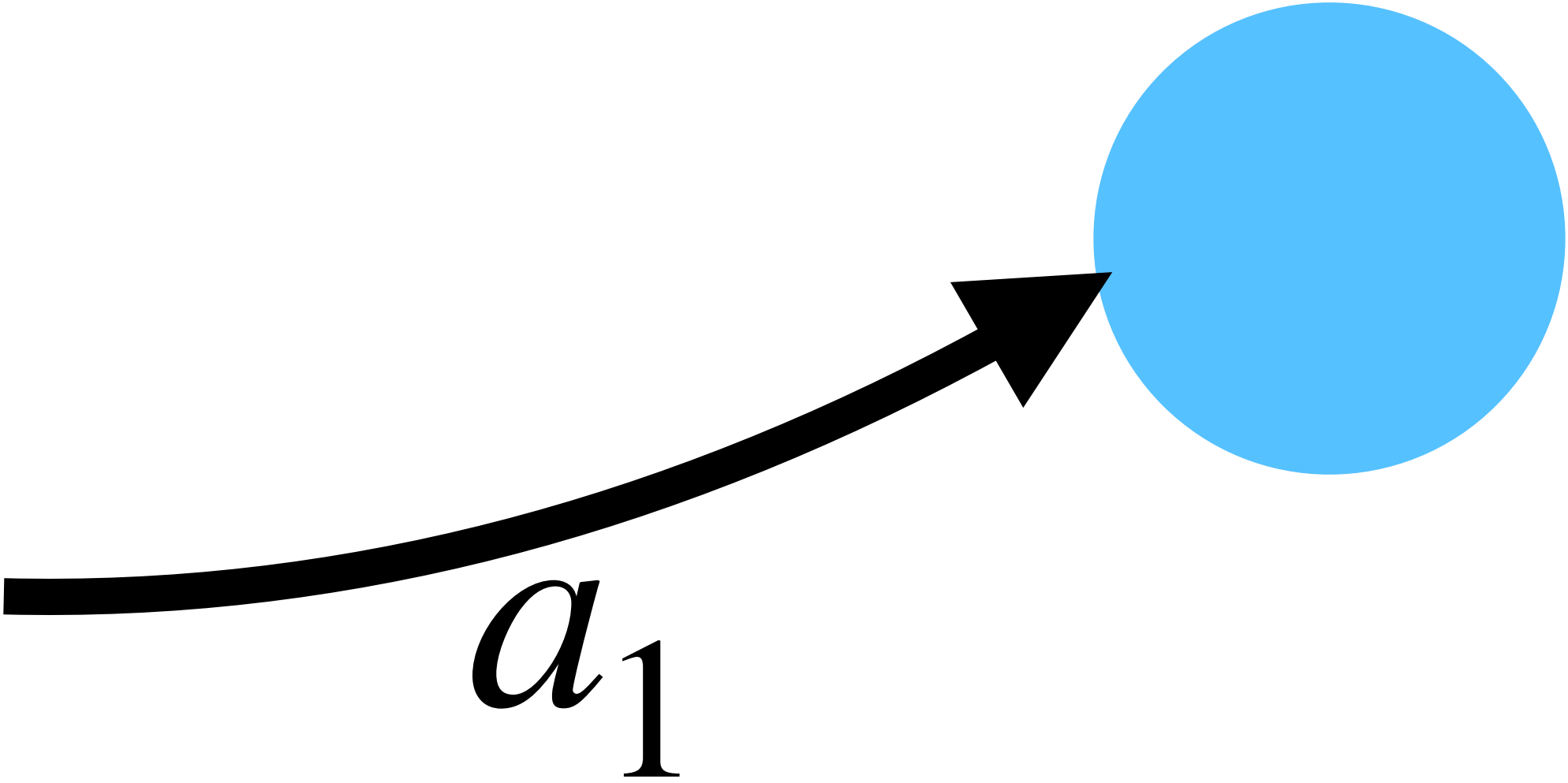


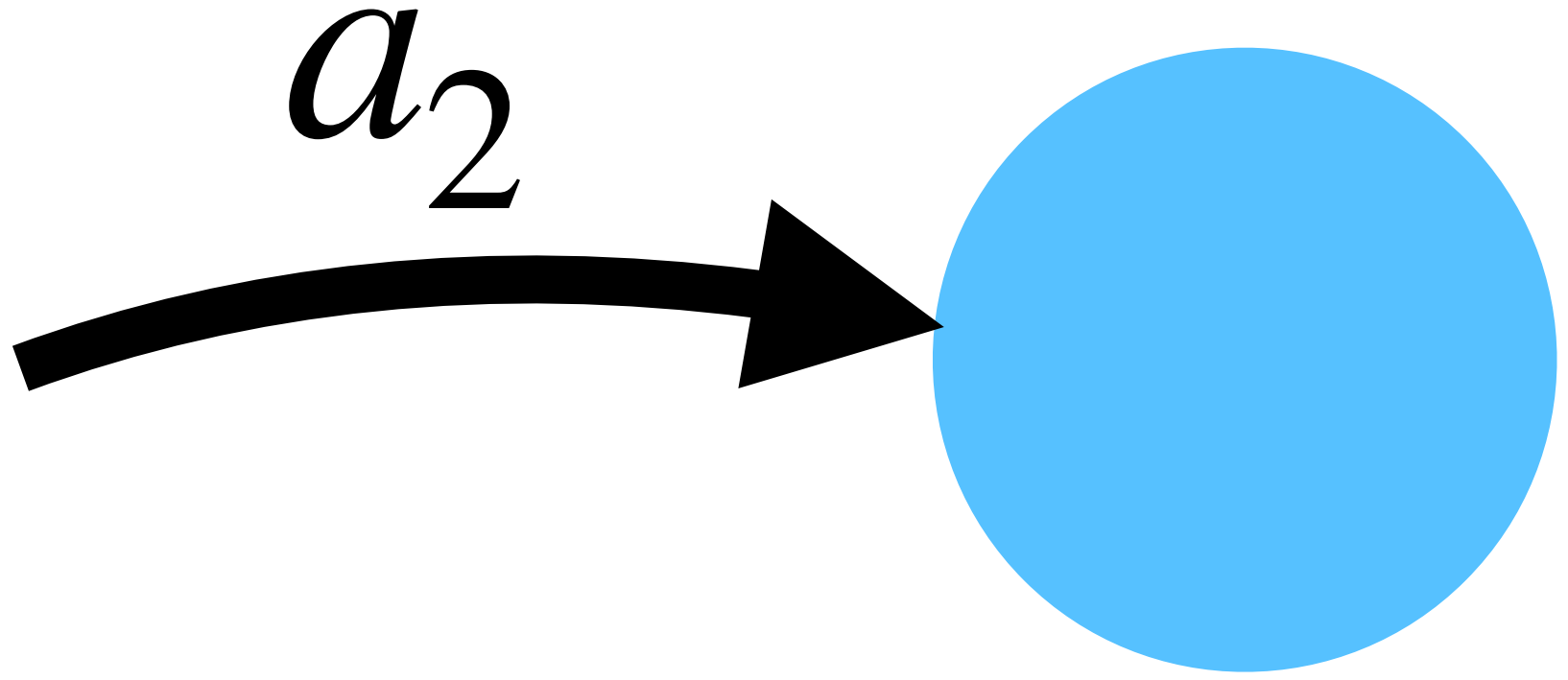

a_1

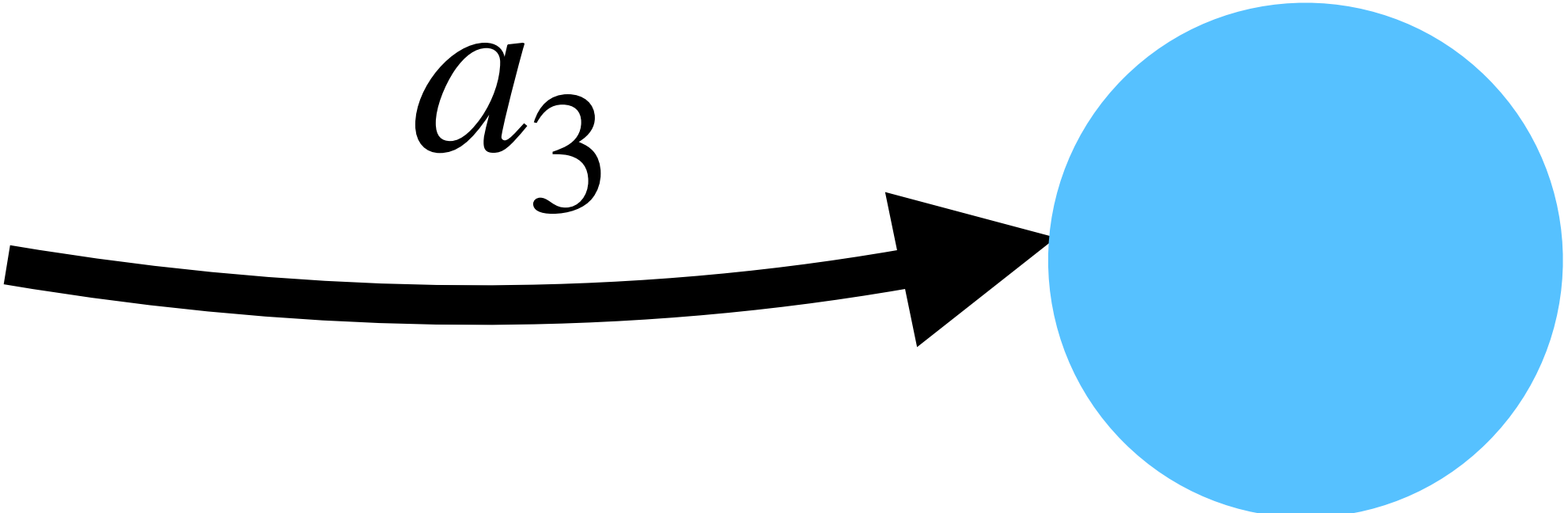

a_0


a_2


a_3


a_1


a_2


a_3

$$J(a_{0:H}) = \gamma^0 r(s_0, a_0) + \gamma^1 r(f(s_0, a_0), a_1) + \ldots + \gamma^H r(f(f(\ldots), a_{H-1}), a_H)$$

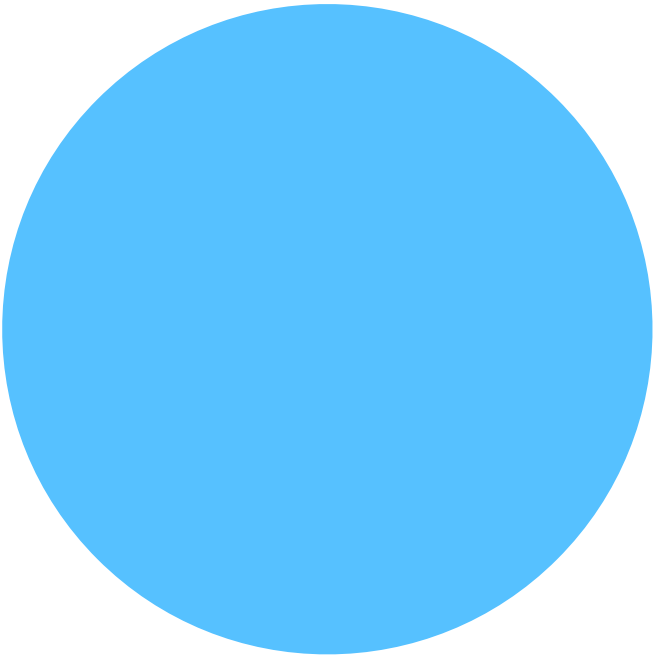
Optimising actions

Recursively evaluate dynamics

Gradient based approaches are fast

But local minima

And vanishing/exploding gradients



Shooting Methods

Illustration

Gradient based approaches are fast

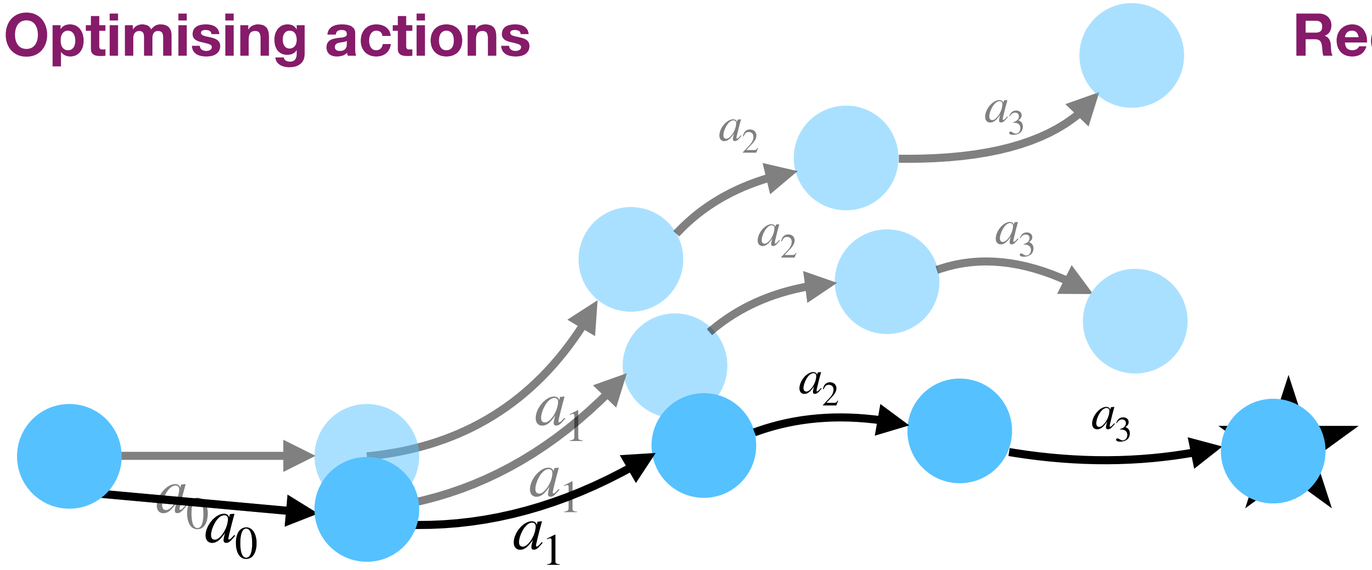
But local minima

And vanishing/exploding gradients

$$\boxed{J(a_{0:H})} = \gamma^0 r(s_0, a_0) + \gamma^1 r(f(s_0, a_0), a_1) + \ldots + \gamma^H r(\boxed{f(f(\ldots), a_{H-1}), a_H})$$

Optimising actions

Recursively evaluate dynamics



Shooting Methods

Random shooting