

Req

Opt

1 0-50

0-200

2 0-50

⋮

3 0-50

4 0-50

5 0-50

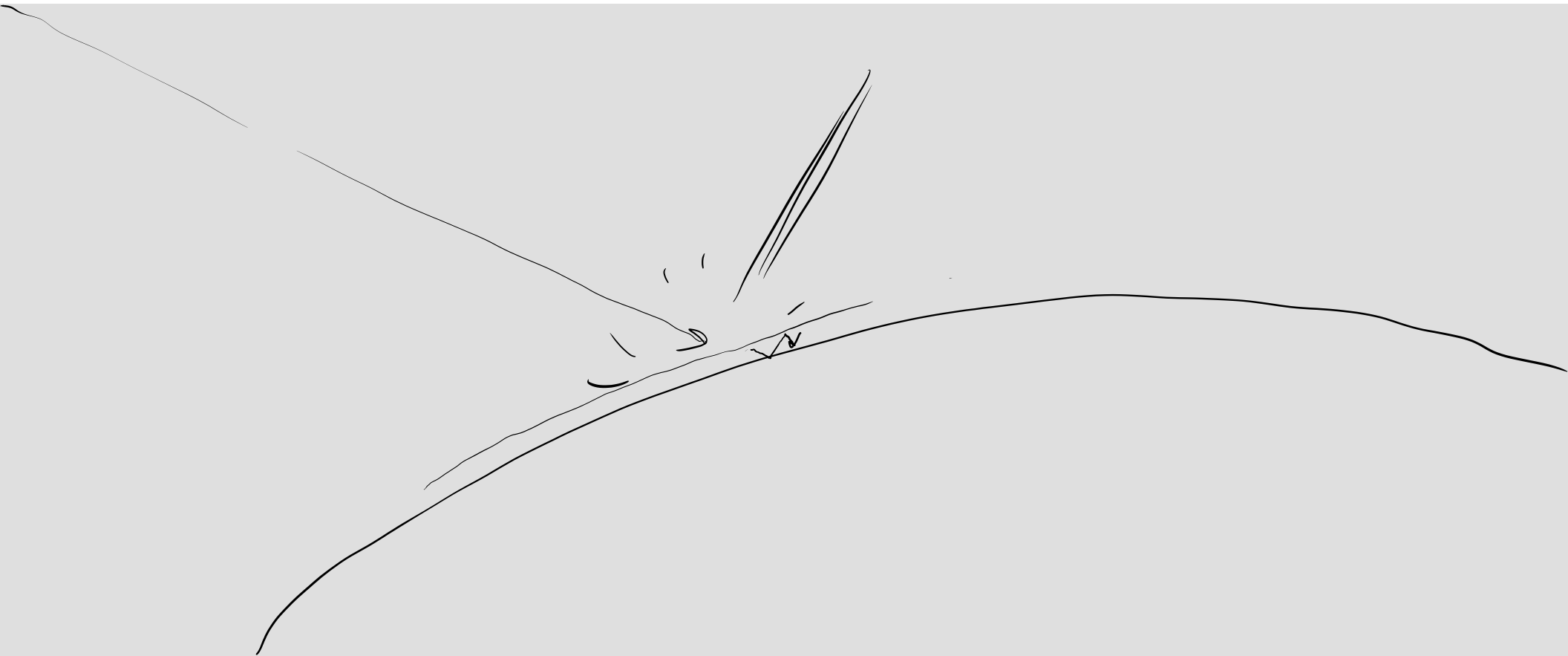
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250

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250

drop > f



60 FPS

# Inverse Kinematics

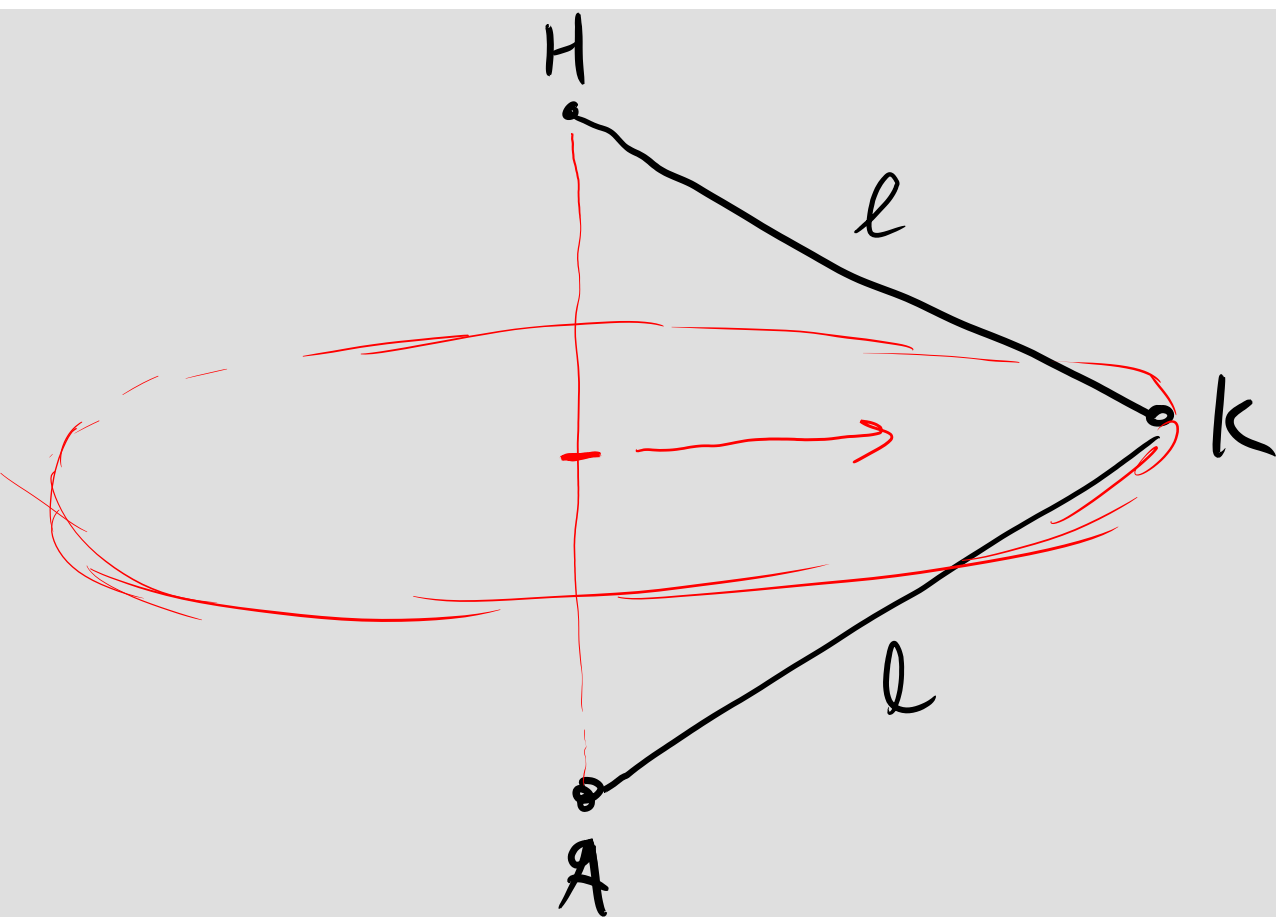
Forward

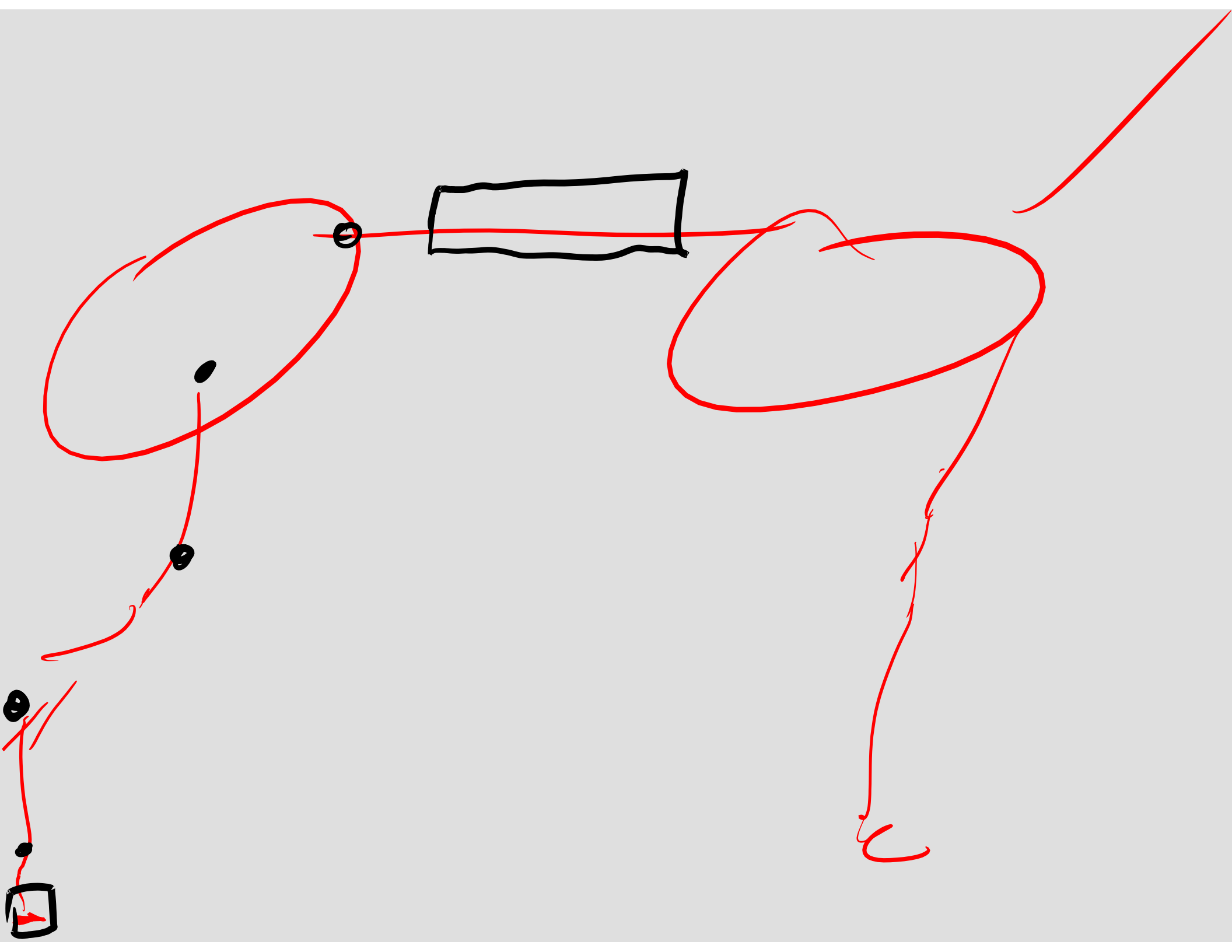


Inverse

Solve



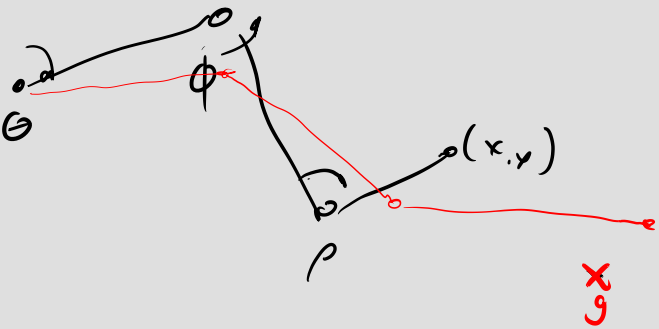




# Jacobian matrix

indep = rotation

dep = end position



$$\begin{bmatrix} \frac{\partial}{\partial \theta} x \\ \frac{\partial}{\partial \phi} x \\ \frac{\partial}{\partial \rho} x \\ \frac{\partial}{\partial \theta} y \\ \frac{\partial}{\partial \phi} y \\ \frac{\partial}{\partial \rho} y \end{bmatrix}$$

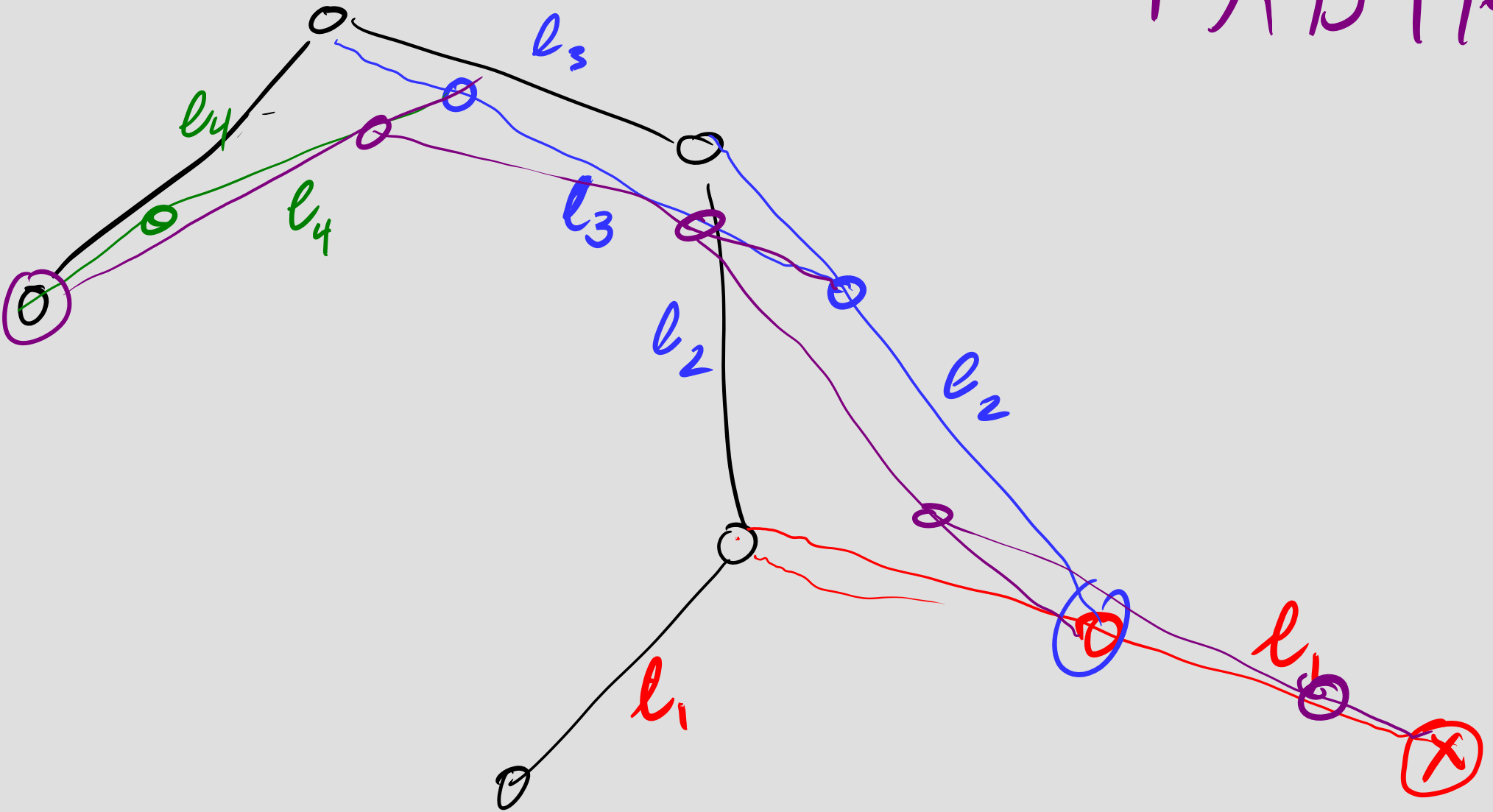
$$\begin{bmatrix} \frac{\partial}{\partial \theta} x \\ \frac{\partial}{\partial \phi} x \\ \frac{\partial}{\partial \rho} x \\ \frac{\partial}{\partial \theta} y \\ \frac{\partial}{\partial \phi} y \\ \frac{\partial}{\partial \rho} y \end{bmatrix}$$

$$\begin{bmatrix} \frac{\partial}{\partial \theta} x \\ \frac{\partial}{\partial \phi} x \\ \frac{\partial}{\partial \rho} x \\ \frac{\partial}{\partial \theta} y \\ \frac{\partial}{\partial \phi} y \\ \frac{\partial}{\partial \rho} y \end{bmatrix}$$

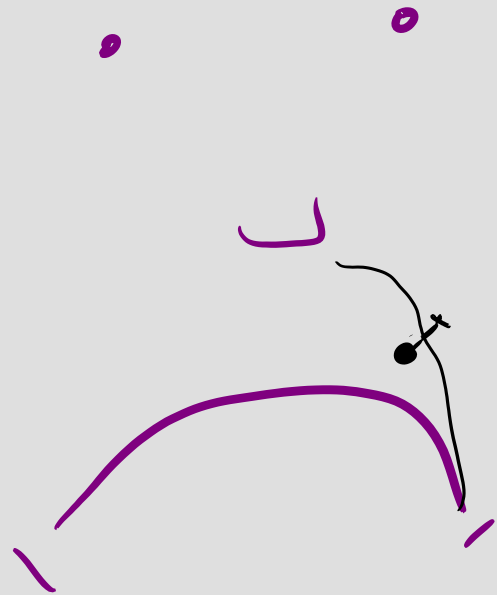
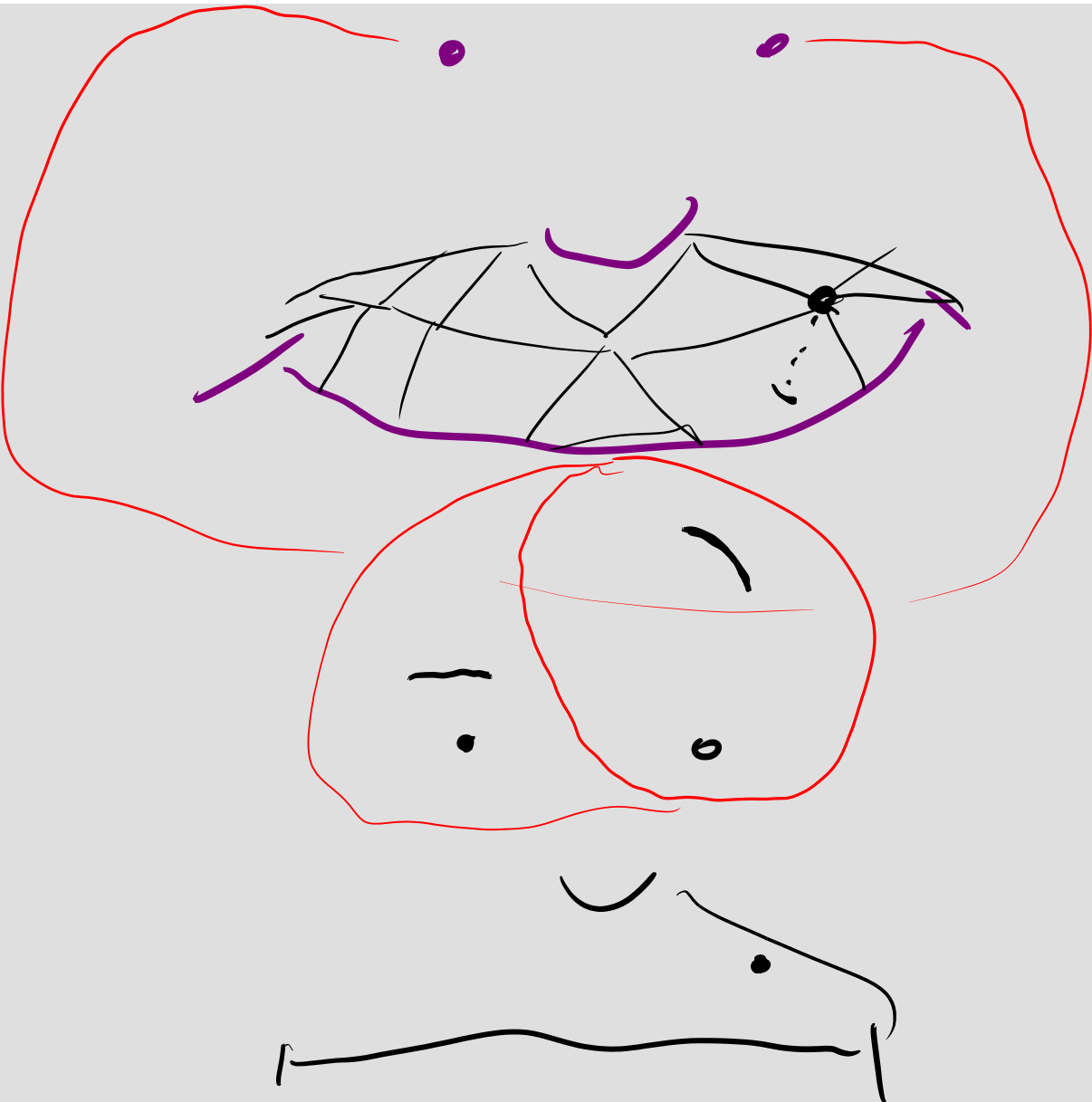
$$\begin{bmatrix} \Delta \theta \\ \Delta \phi \\ \Delta \rho \end{bmatrix}$$

$$\approx \begin{bmatrix} \Delta x \\ \Delta y \end{bmatrix}$$

FABRIK







Lattice

3d

atoms / barrier

