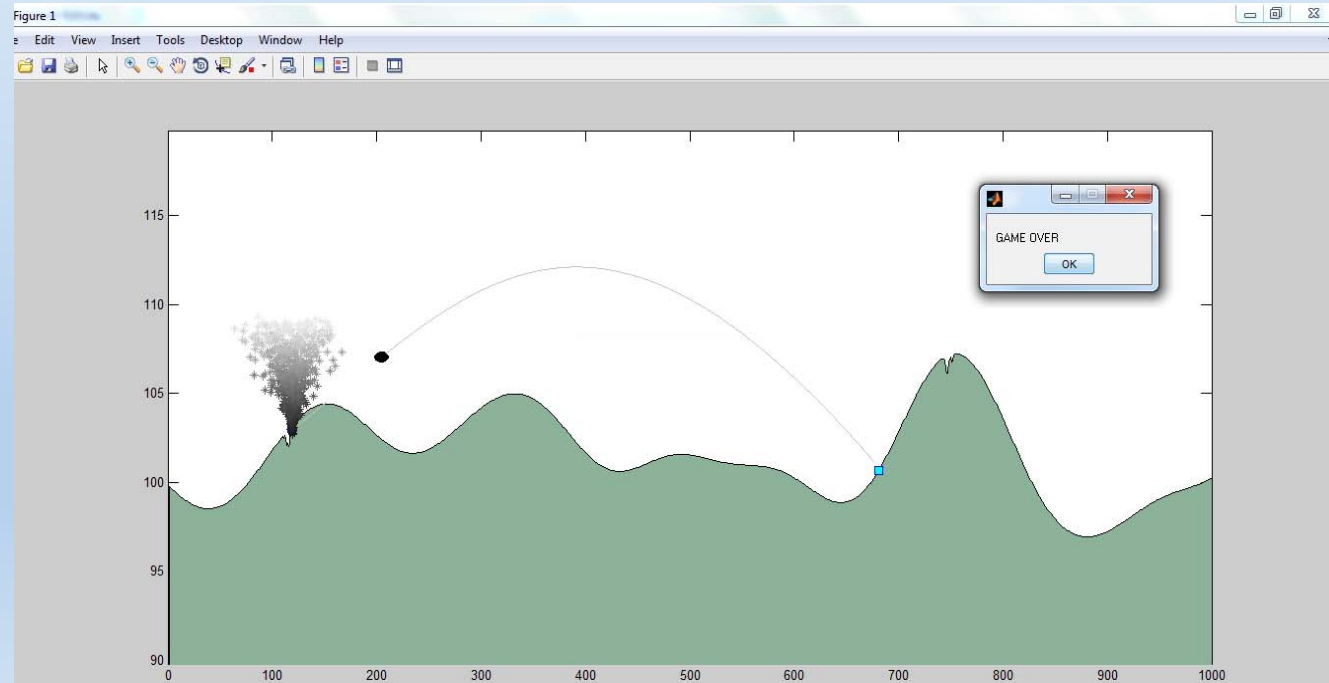
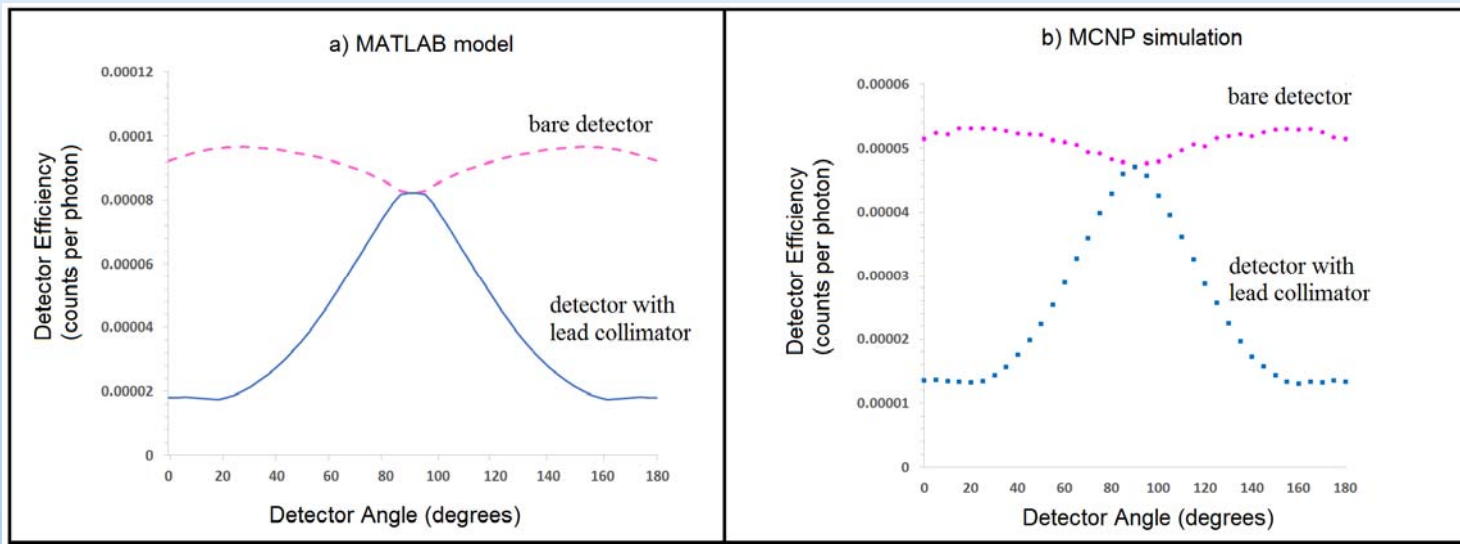


Introduction to MATLAB

Fun and Games



Useful Math



$$\varphi_0 = \arcsin(r/d)$$

$$t = 2\sqrt{r^2 - d^2 \sin^2 \varphi}$$

$$\rho = d \cos \varphi - t/2$$

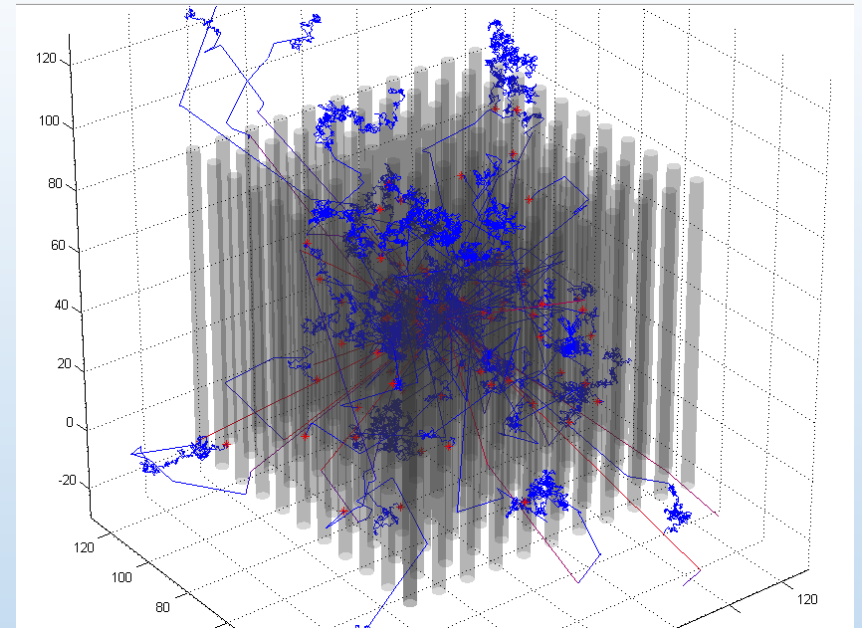
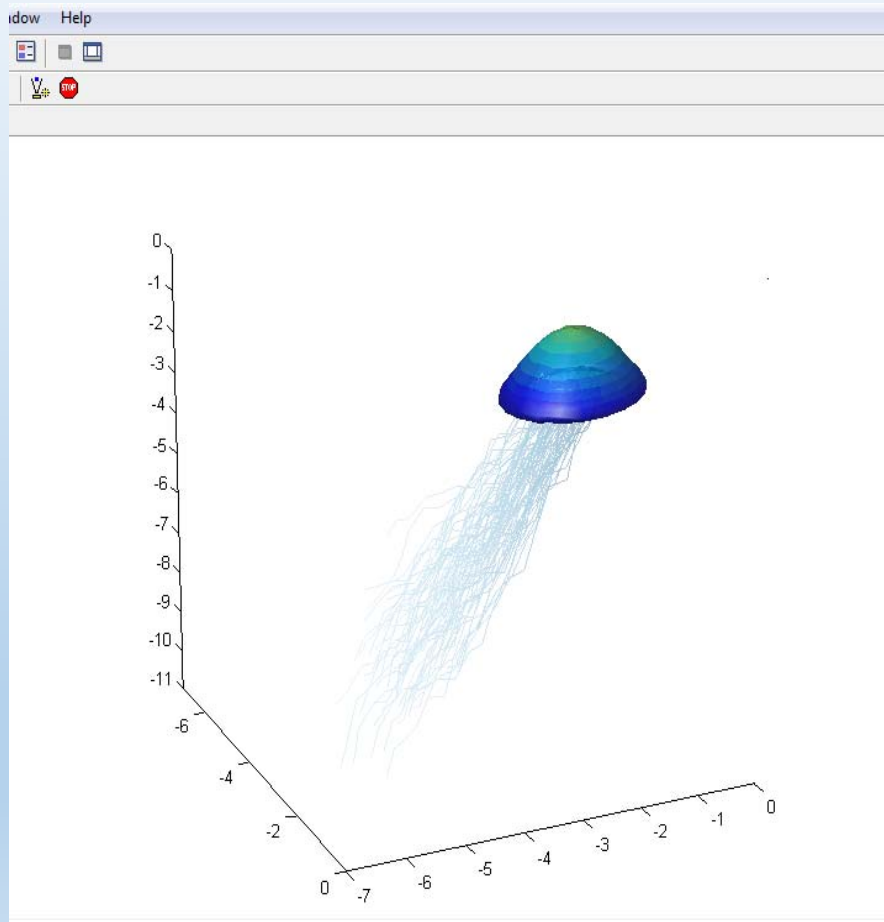
$$\theta_{\min} = \arctan\left(\frac{\rho}{H-s}\right), \quad \theta_1 = \arctan\left(\frac{\rho+t}{H-s}\right),$$

$$\theta_2 = \pi - \arctan\left(\frac{\rho+t}{s}\right), \quad \theta_{\max} = \arctan\left(\frac{\rho}{s}\right)$$

$$\ell(\theta, \varphi) = \begin{cases} \frac{H-s}{\cos \theta} - \frac{\rho}{\sin \theta}, & \theta_{\min} < \theta < \theta_1 \\ \frac{t}{\sin \theta}, & \theta_1 \leq \theta \leq \theta_2 \\ \frac{s}{\cos(\pi - \theta)} - \frac{\rho}{\sin(\pi - \theta)}, & \theta_2 < \theta < \theta_{\max} \end{cases}$$

$$\varepsilon_T = 2 \int_0^{\varphi_0} \int_{\theta_{\min}}^{\theta_{\max}} (1 - e^{-\mu \cdot \ell(\theta, \varphi)}) \sin \theta d\theta d\varphi$$

Imagination



Monte Carlo Simulation