

Moving Pattern Sampling Tutorial Exercise

Exercise

Consider a sinusoidal bar pattern described by

$$\psi(x, y) = \sin(4\pi(x - y)).$$

Assuming that the unit for x and y directions is meters (m) and this pattern is moving at a speed of (u_x, u_y) meters/second (m/s), calculate the necessary sampling rates in temporal direction, for the following velocities:

1. $(u_x, u_y) = (1, 1)$.
2. $(u_x, u_y) = (-1, 1)$.
3. $(u_x, u_y) = (2, 1)$.