Example: Changing phase of the Source
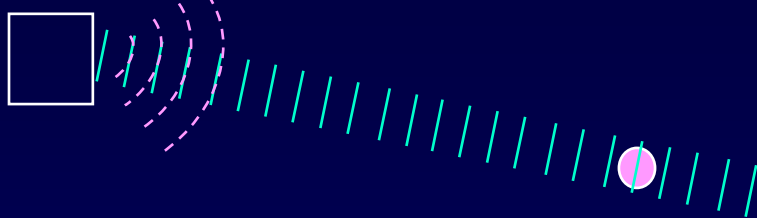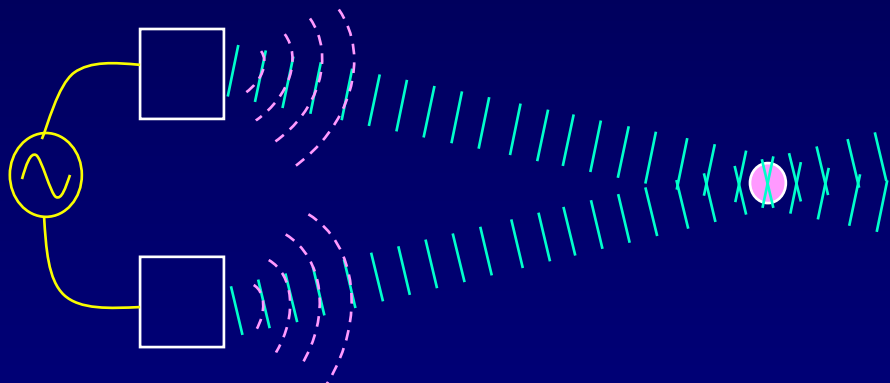
Each speaker alone produces an intensity of $I_1 = 1 \text{ W/m}^2$ at the listener:

$I = I_1 = A_1^2 = 1 \text{ W/m}^2$
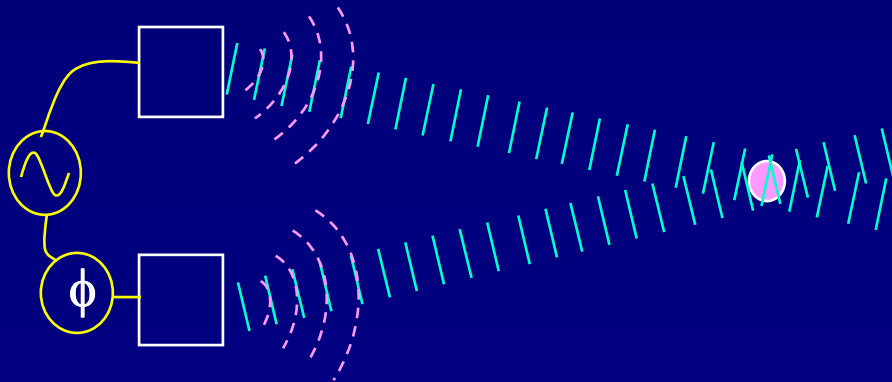
Drive the speakers in phase. What is the intensity I at the listener?

$I = (2A_1)^2 = 4I_1 = 4 \text{ W/m}^2$

Now shift phase of one speaker by 90°. What is the intensity I at the listener?

$I = 4 I_1 \cos^2(45^0) = 2.0 I_1 = 2.0 \text{ W/m}^2$