A beam of light polarized at 45 degrees is incident on a vertically (i.e. 0 degrees) oriented polarizer. If the first photon is observed to pass through the polarizer, the probability that the second will pass through is

A) 50 percent

B) greater than 50 percent

C) less than 50 percent

D) we can't predict the probability since it's completely random

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A) 50 percent → prob. for each one completely indep. of previous ones.

B) greater than 50 percent → can predict probability exactly.

C) less than 50 percent → can't predict what will happen each time.

D) we can't predict the probability since it's completely random

Which explains the result that we get the same interference pattern even if we send the photons in one at a time?

A) Each photon interferes with other photons that have already passed through.
B) Each photon spreads its energy over the screen with the characteristic interference pattern.
C) Each photon hits the screen at a specific location, but the probability for each location is related to the classical intensity distribution.
D) The photons hit the screen at different places because they each go through the slits at a slightly different place
E) More than one of the above models works

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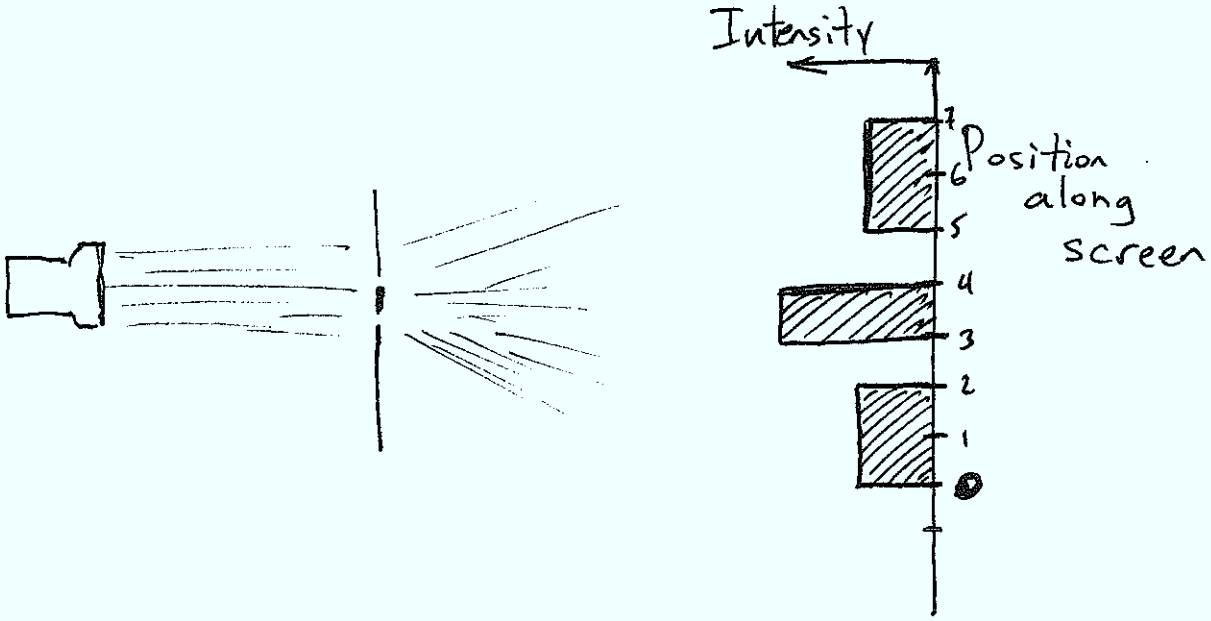
In a diffraction experiment the following pattern of intensity is observed on a screen:



We can conclude that the probability for a single photon to hit the screen between 0 and 2 is

A) Equal to the probability to hit between 3 and 4

B) Half the probability to hit between 3 and 4

C) Double the probability to hit between 3 and 4

D) Not related to the classical intensity pattern.

What do you think happens to the interference pattern if we only open one slit at a time (alternate for each photon)?

A) We get the same pattern as before.

B) The pattern changes.

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A) We get the same pattern as before.

(B) The pattern changes.

Single photon pattern: always same as for classical light (high intensity). If cover one slit, will get max intensity behind other slit.

Alternate slits: get sum of patterns for individual slits.