2-slits Revisited (4)

Hold on! This is kind of weird!

How do we get an interference pattern from single "particles" going through the slits one at a time?

Q: Doesn't the photon have to go through either slit 1 or slit 2?
A: No! Not unless we actually measure which slit !

The experimental situation:

- With only one slit open: You get arrival pattern P_1 or P_2 (see next slide).

- With both slits open:
- If something 'measures' which slit the photon goes through, there is no interference: $P_{tot} = P_1 + P_2$.
- If nothing 'measures' which slit the light goes through, P_{tot} shows interference, as if the photon goes through both slits!

Each individual photon exhibits wave behavior!

QM waves are not a collective phenomenon.