

Outline Section	Core Concept/Analogy	Supporting Source References (Source/Snippet Index)
1. The Core Problem	Particle (dot) analogy fails (Double-slit interference).	3.1 (Particle waves), 3.3, 2.4 (Photon is a wave)
	Infinite wave analogy fails (Position is everywhere).	3.3, 1.1 (Infinite wave = unknown position)
2. The Wavepacket Concept	Wavepacket is the essential compromise/localized disturbance.	4.2, 4.3 (Wave packet is a localized disturbance)
	Musical Analogy (Sound pulse/Superposition of frequencies).	3.2 (Hand clap/frequency spectrum), 3.1 (Pitch), 4.5 (Tuning/Beats)
	Water Analogy (Wave group/Superposition).	4.1, 4.3 (Wave packet is sum of different waves)
3. Visualizing a Wavepacket	2D/3D Representation: Wave-function (Ψ) and probability density (Ψ^2)	Ψ
	Peak = Most likely position; Width = Position Uncertainty (Δx).	1.1 (Peak means higher probability), 3.3 (σ_x reduced by using many waves)
4. Uncertainty Principle	Inverse relationship between position uncertainty (Δx) and momentum uncertainty (Δp).	3.3 (Inverse relationship), 3.4 (Wavelength vs. Position on a string), 3.1 (Narrow packet = wide momentum distribution)