

ABE vs. Entanglement: A Layered Model

This handout presents a conceptual framework for understanding how the Aharonov–Bohm Effect (ABE) and quantum entanglement may interact in experimental reports (e.g., Persinger, Rouleau, Kernbach). It proposes that ABE establishes a shared phase reference ("scaffold") between distant systems, upon which secondary entanglement-like correlations may emerge. This layered view reconciles reports of nonlocal correlations without invoking pure quantum entanglement as the primary cause.

1. ABE as Phase Scaffolding

- ABE predicts phase shifts in charged particles due to vector potentials, even in field-free regions.
- When two systems are exposed to identical vector potential patterns, they share a common phase reference.
- This creates phase coherence without requiring a shared origin event or direct coupling.
- In reports, this manifests as synchronized pH shifts, photon bursts, or EEG coherence across distances.

2. Entanglement as Secondary Effect

- True quantum entanglement arises when two systems share a non-factorizable wavefunction.
- ABE-induced coherence may promote conditions for entanglement (e.g., by reducing decoherence noise).
- Thus, while ABE is the *cause of the link*, entanglement can form *on top of the link* as a secondary phenomenon.
- This could explain why experiments show entanglement-like correlations without Bell inequality violations.

3. Practical Distinctions

Feature	ABE	Correlation	Quantum Entanglement
Origin	Shared field/potential configuration	Shared wavefunction at creation	Mechanism
Mechanism	Phase reference locking via vector potential	Non-factorizable quantum state	Fragility
Fragility	Sensitive to phase drift, robust to distance	Sensitive to measurement and decoherence	Testability
Testability	Correlated shifts, coherence (pH, photons, EEG)	Bell inequality violation	Engineering Potential
Engineering Potential	Scaffolding for comms, synchronization	Secure QKD, quantum computing	

4. Implications

- If correlations in Persinger/Kernbach-style reports are due to ABE, then entanglement is not the cause but a possible byproduct.
- This suggests new engineering strategies: use ABE for synchronization and coherence, and entanglement as an added layer.
- It also frames cybersecurity risks: ABE-style phase manipulation could establish covert links, while entanglement enhances them.