Summary: Quantum Semantic Learning on NISQ Hardware
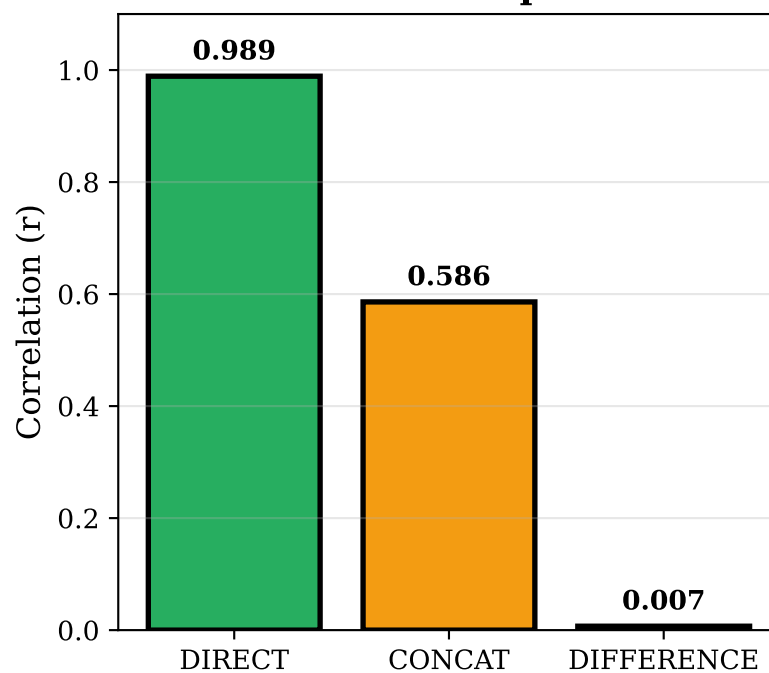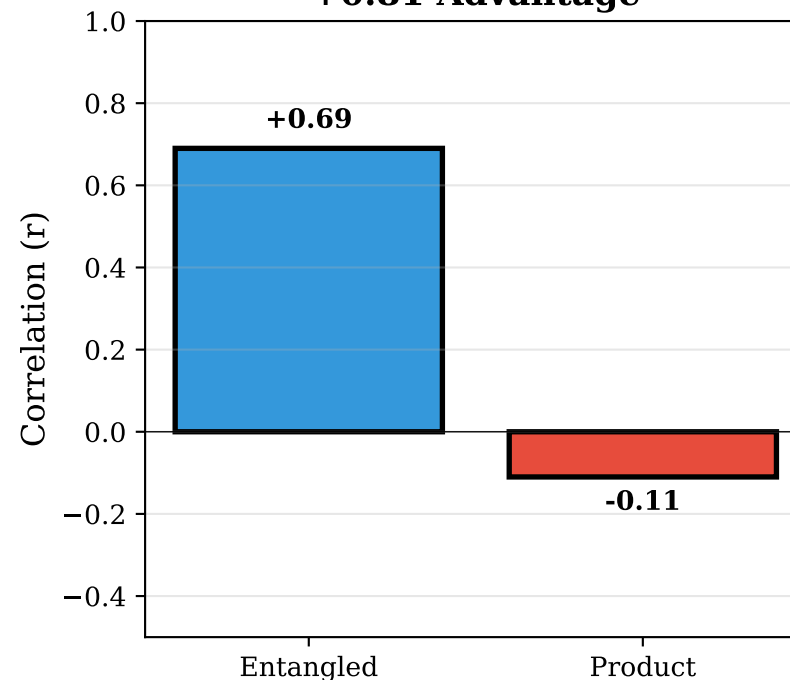**All Results Hardware-Validated on IBM ibm_fez (156 qubits)**
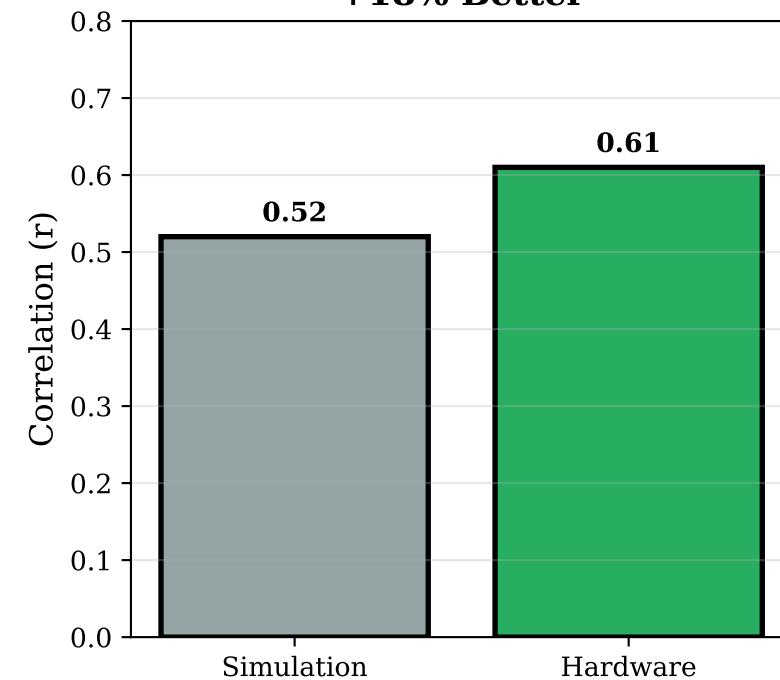
(A) Encoding Hierarchy
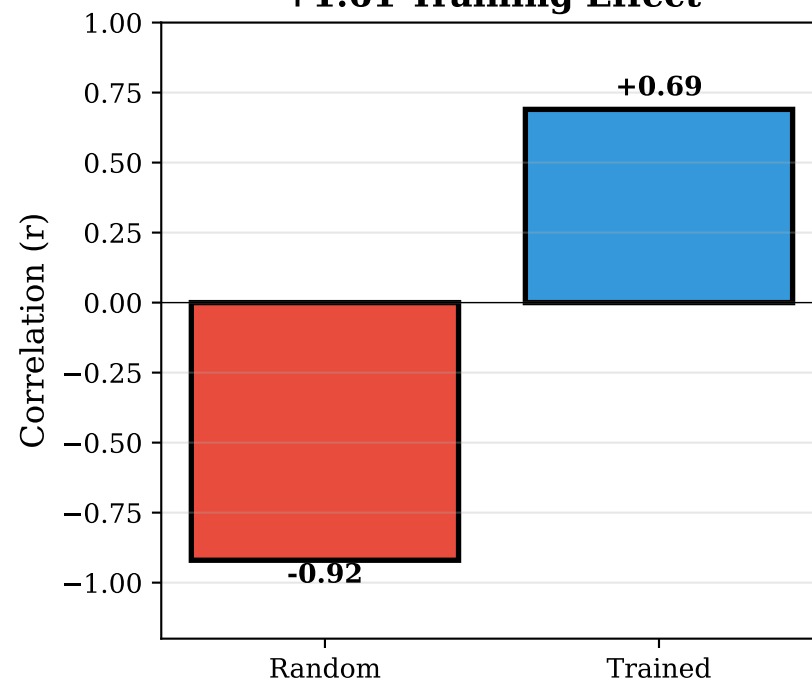**132× Gap**

- DIRECT: 0.989
- CONCAT: 0.586
- DIFFERENCE: 0.007

(B) Entanglement Effect
+0.81 Advantage

- Entangled: +0.69
- Product: -0.11

(C) Hardware Transfer
+18% Better

- Simulation: 0.52
- Hardware: 0.61

(D) Learning Effect
+1.61 Training Effect

- Random: -0.92
- Trained: +0.69

(E) Empirical Scaling Law
4.25× Improvement (12→40 pairs)

- Classical Baseline (r=0.86)
- Projection
- Hardware Results