QPE Discrimination on 8-cycle: N=8, s=3, $\Delta(P)=0.785$ (A) QPE for $|\pi\rangle$ on 8-cycle (B) QPE for $|\psi_i\rangle$ on 8-cycle 1.0 ¬ 1.0 -Peak at m=0 (phase ≈ 0) 0.8 -0.8 Peak at m=1

Appear ≈ 0.125)

Peak at m=1

Appear ≈ 0.125) Probability 6.0 9.0 0.2 0.2 0.0 0.0 110 111 000 111 000 001 010 011 100 101 001 010 011 100 101 110 Ancilla measurement outcome m Ancilla measurement outcome m