

Probabilistic CNOT Gate with Actively Synchronized Photon Pairs at Room Temperature

Haim Nakav, Tanim Firdoshi, Ofer Firstenberg

Physics of Complex Systems, Weizmann Institute of Science and AMOS, Rehovot 7610001, Israel

Controlling the synchronization of photons from probabilistic quantum sources plays a pivotal role in pursuing efficient quantum information processing. Utilizing such photon sources and multiple quantum memories stands among the leading architectures for applicable photon-based quantum computers[1]. Our work demonstrates a probabilistic entangling gate [2, 3] with actively synchronized photon pairs at room temperature [4, 5, 6]. We compare the gate's performance on synchronized photon pairs generated by the source and memory with accidental pairs from the source alone. Our research contributes to the progress of scalable photonic quantum technologies, providing valuable insights and advancements in the field.

References

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