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Title: Photonic Implementation of the Quantum Morra Game

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Abstract: We will present a faithful translation of a two-player quantum Morra game, building upon previous work that includes the classical game as a special case. Introducing a natural deformation of the game in the quantum regime, we give Alice a winning advantage, disrupting the balance of the classical game. In certain cases, a Nash equilibrium can be reached using a pure strategy, a departure from the classical game where a mixed strategy is always necessary. We prepared our states using photonic qubits in a linear optics setup, achieving an average deviation of less than 2% from the measured outcome probabilities. Finally, we explore potential applications of the quantum Morra game in the realm of quantum information and communication.