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1. **A quantum entanglement-based algorithm for discriminating non-orthogonal qubits**
M. Zidan, M. N. El-Qersh, M. Abdel-Aty, M. Qasymeh, *H. Eleuch*
[AEJ 112](#), 339 (2025)
2. **Quantum correlations and parameter estimation for two superconducting qubits interacting with a quantized field**
K. Berrada, S. Abdel-Khalek, M. Algarni and *H. Eleuch*
[Scientific Reports 14](#), 26846 (2024).
3. **Full Quantum Tomography Study of Google's Sycamore Gate on IBM's Quantum Computers**
M. AbuGhanem and *H. Eleuch*
[EPJ Quantum Technology 11](#), 36 (2024).
4. **Chaos and regularities in cavity assisted two-channel nonlinear coupler**
F. Chogle, S. S. Varghese, A-B M. A. Ibrahim, A. Prasad and *H. Eleuch*
[Chaos, Solitons and Fractals 189](#), 115650 (2024).
5. **Interplay between non-equilibrium and non-Markovianity in controlling the entropic uncertainty bound**
Abdul Basit, Hamad Ali, Gao Xianlong, Peng-Bo Li, Gehad Sadiek, and *Hichem Eleuch*
[Physical Review A 110](#), 012429 (2024).
6. **Nonclassical light in a three-waveguide coupler with second-order nonlinearity**
Mohd Syafiq M. Hanapi, Abdel-Baset M. A. Ibrahim¹, Rafael Julius, Pankaj K. Choudhury, and *Hichem Eleuch*
[EPJ Quantum Technology 11](#), 51 (2024).
7. **NISQ Computers: A Path to Quantum Supremacy**
M. AbuGhanem, and *H. Eleuch*
[IEEE Access 12](#), 102941 (2024).
8. **Q-Map: Quantum Circuit Implementation of Boolean Functions**
H. Hajjdiab, A. Khalil and *H. Eleuch*
[Physica Scripta 99](#), 085127 (2024).
9. **Exploring optical tomography dynamics for a dissipative coherent cavity in interaction with two-level atomic system**
A.-B.A. Mohamed, T.A. Alrebdi, F. Alkallas, A-H Abdel-Aty, and *H. Eleuch*
[Results in Physics 61](#), 107755 (2024).
10. **Optical Tomography and Coherence of a Cavity Interacting with Two Time-dependent Position Qubits**
A.-B.A. Mohamed,, and *H. Eleuch*
[Physica Scripta 99](#), 105101 (2024).
11. **Interaction of a four-level atom with a quantized field in the presence of a nonlinear Kerr medium**
K. Berrada, S. Almalki, S. Abdel-Khalek and *H. Eleuch*
[Scientific Reports 14](#), 1141 (2024).
12. **Light squeezing enhancement by coupling nonlinear optical cavities**
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13. **Quantum steering and coherence evolution of two atoms under noisy environments**
K. Berrada, A. Sabik and *H. Eleuch*
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14. **Boundary-induced topological transition in an open SSH model**
A. Bissonnette, N. Delnour, A. McKenna, *H. Eleuch*, M. Hilke, and R. MacKenzie
[Physical Review B 109](#), 075106 (2024).
15. **Phase characterization and extraction of new forms of solitons for the (3+1)-dimensional q-deformed Sinh-Gordon equation**
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[JTUSCI 18](#), 2321647 (2024).
16. **Two-qubit Entangling Gates for Superconducting Quantum Computers**
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17. **Nonlocal correlations dynamics of two-qubit Heisenberg XYZ states with influence of intrinsic decoherence and y-component of Dzyaloshinskii-Moriya interaction**
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18. **EPR steering and parameter estimation in the context of dephasing of two interacting qubits**
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19. **New solutions for the generalized q-deformed sinh-Gordon equation with q-calculus**
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21. **Investigation of complex hyperbolic and periodic wave structures to a new form of the q-deformed Sinh-Gordon equation with fractional temporal evolution**
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36. **Two-qubit-Heisenberg local quantum Fisher information dynamics induced by intrinsic decoherence model**
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55. **Two-magnon non-locality and coherence induced by an open microwave cavity: Generation and robustness**
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