

Publications in Refereed Journal:

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1. *Noisy dynamics of Gaussian entanglement: a transient bound entangled phase before separability*,
G. Singh, **Saptarshi Roy**, Arvind
Phys. Rev. A **112**, 052424 (2025).
2. *Activation of thermal states by quantum SWITCH-driven thermalization and its limits*,
K. Simonov, **Saptarshi Roy**, T. Guha, Z. Zimboras, G. Chiribella,
New Journal of Physics **27**, 074502 (2025).
3. *Typical behaviour of genuine multimode entanglement of pure Gaussian states*,
Saptarshi Roy,
Phys. Rev. A **111**, 062414 (2025).
4. *The communication power of a noisy qubit*,
G. Chiribella, **Saptarshi Roy**, T. Guha, S. Saha,
Phys. Rev. Lett. **134**, 080803 (2025).
5. *Hybrid nonlocality via atom photon interactions with and without impurities*,
P. Halder, R. Banerjee, **Saptarshi Roy**, A. Sen De,
Phys. Rev. A **111**, 012431 (2025).
6. *Quantum illumination with noisy probes: Conditional advantages of non-Gaussianity*,
R. Gupta, **Saptarshi Roy**, T. Das, A. Sen (De),
Phys. Lett. A **505**, 129446 (2024).
7. *Robustness of Higher Dimensional Nonlocality against dual noise and sequential measurements*,
Saptarshi Roy, A. Kumari, S. Mal, A. Sen (De),
Phys. Rev. A **109**, 062227 (2024).
8. *Quantum networks boosted by entanglement with a control system*,
T. Guha, **Saptarshi Roy**, G. Chiribella,
Phys. Rev. Research **5**, 033214 (2023).
9. *Emergence of Monogamy under Static and Dynamic Scenarios*,
R. Gupta, **Saptarshi Roy**, S. Mal, A. Sen (De),
Phys. Rev. A **108**, 012420 (2023).
10. *Quantum Dense Coding Network using Multimode Squeezed States of Light*,
A. Patra, R. Gupta, **Saptarshi Roy**, T. Das, A. Sen De,
Phys. Rev. A **106**, 052607 (2022).
11. *Significance of Fidelity Deviation in Continuous Variable Teleportation*,
A. Patra, R. Gupta, **Saptarshi Roy**, A. Sen De,
Phys. Rev. A **106**, 022433 (2022).

12. *Gain in performance of quantum teleportation with uniformity breaking distributions*,
Saptarshi Roy, S. Mal, A. Sen (De),
Phys. Rev. A **105**, 022610 (2022).
13. *Distribution of entanglement with variable range interactions* ,
L. G. C. Lakkaraju, S. Ghosh, **Saptarshi Roy**, A. Sen (De),
Phys. Lett. A **418**, 127703 (2021).
14. *Restrictions on shareability of classical correlations for random multipartite quantum states*,
Saptarshi Roy, S. Mal, A. Sen (De),
Phys. Rev. A. **103**, 052401 (2021).
15. *Recycling the resource: Sequential usage of shared state in quantum teleportation with weak measurements* ,
Saptarshi Roy, A. Bera, S. Mal, A. Sen (De),
Phys. Lett. A **392**, 127143 (2021).
16. *How efficient is transport of quantum cargo through multiple highways?*,
Saptarshi Roy, T. Das, D. Das, A. Sen (De),
Annals of Physics **422**, 168281 (2020).
17. *Response of macroscopic and microscopic dynamical quantifiers to the quantum critical region*,
S. Haldar, **Saptarshi Roy**, T. Chanda, A. Sen (De),
Phys. Rev. Research **2**, 033249 (2020)
18. *Rating the performance of noisy teleportation using fluctuations in fidelity*,
Saptarshi Roy, A. Ghosal,
Phys. Rev. A **102**, 012428 (2020).
19. *Computable genuine multimode entanglement measure: Gaussian vs. non-Gaussian*,
Saptarshi Roy, T. Das, A. Sen (De),
Phys. Rev. A **102**, 012421 (2020).
20. *Multipartite entanglement at dynamical quantum phase transitions with non-uniformly spaced criticalities*,
S. Haldar, **Saptarshi Roy**, T. Chanda, A. Sen (De), U. Sen,
Phys. Rev. B **101**, 22430 (2020).
21. *Fidelity deviation in quantum teleportation with a two-qubit state*,
A. Ghosal, D. Das, **Saptarshi Roy**, S. Bandyopadhyay,
J. Phys. A: Math. Theor. **53**, 145304 (2020).
22. *Optimal two-qubit states for quantum teleportation vis-à-vis state properties*,
A. Ghosal, D. Das, **Saptarshi Roy**, S. Bandyopadhyay,
Phys. Rev. A **101**, 012304 (2020).
23. *Universality in Distribution of Monogamy Scores for Random Multiqubit Pure States*,
S. Rethinasamy, **Saptarshi Roy**, T. Chanda, A. Sen (De), and U. Sen,
Phys. Rev. A **99**, 042302 (2019).

24. *Phase boundaries in alternating field quantum XY model with Dzyaloshinskii-Moriya interaction: Sustainable entanglement in dynamics* ,
Saptarshi Roy, T. Das, T. Chanda, D. Sadhukhan A. Sen (De), and U. Sen,
Phys. Rev. B **99**, 064422 (2019).
25. *Response in violation of Bell inequality to imperfect photon addition and subtraction in noisy squeezed states of light* ,
Saptarshi Roy, T. Das, T. Chanda, A. Sen (De), and U. Sen,
Phys. Rev. A **98**, 052131 (2018).
26. *Deterministic Quantum Dense Coding Networks*,
Saptarshi Roy, T. Das, T. Chanda, A. Sen (De), and U. Sen,
Phys. Lett. A **382**, 1709 (2018).
27. *Activation of Nonmonogamous Multipartite Quantum States*,
Saptarshi Roy, T. Das, A. Kumar, A. Sen (De), and U. Sen,
Phys. Rev. A **98**, 012310 (2018).

Communicated:

28. *Localizing genuine multimode entanglement: Asymmetric gains via non-Gaussianity*,
R. Banerjee, **Saptarshi Roy**, T. Das, A. Sen (De),
arXiv:2103.10388 [quant-ph].
29. *Quantum illumination with a light absorbing target*,
R. Gupta, **Saptarshi Roy**, T. Das, A. Sen (De),
arXiv:2111.01069 [quant-ph].
30. *Operational Ergotropy: suboptimality of the geodesic drive*,
P. Halder, S. Ghosh, **Saptarshi Roy**, T. Guha,
arXiv:2403.05956 [quant-ph].
31. *More nonlocality with less incompatibility in higher dimensions: Bell vs prepare-measure scenarios*,
S. Mondol, P. Halder, **Saptarshi Roy**, A. Sen De,
arXiv:2411.11152 [quant-ph].
32. *Classical capacities under physical constraints: More capacity with less entanglement*,
S. Mondol, P. Halder, **Saptarshi Roy**, A. Sen De,
arXiv:2504.21748 [quant-ph].
33. *Random access Bell game by sequentially measuring the control of the quantum SWITCH*,
G. Aggarwal and **Saptarshi Roy**,
arXiv:2511.04272 [quant-ph].
34. *Hierarchies of Gaussian multimode entanglement from thermodynamic quantifiers*,
M. Samanta, S. Mondal, A. Patra, **Saptarshi Roy**, A. Sen (De)
arXiv:2602.18816 [quant-ph].