Quantum models of Riemann zeta function, algebraic entanglement models, and (adelic) Galois representations

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The Hilbert–Pólya conjecture connects the Riemann Hypothesis on the Riemann zeta function with the eigenvalues of quantum Hamiltonians. This also applies to Selberg's trace formula and Selberg classes. In this presentation, we plan to continue and expand on the discussions of the preprint [3]. Selected current problems in quantum mathematics related to these problems will be briefly reviewed, based on spectral methods and the adelic approach [1, 4, 2]. Algebraic entanglement models and (adelic) Galois representations will also be presented.

References

[1] Alain Connes, Caterina Consani, and Henri Moscovici. Zeta zeros and prolate wave operators: semilocal adelic operators. *Ann. Funct. Anal.*, 15(4):Paper No. 87, 38 pp., 2024. doi:10.1007/s43034-024-00388-z.

[2] Ramūnas Garunkštis and Jokūbas Putrius. Zeros of the degree zero functions from the extended Selberg class. *Int. J. Number Theory*, 21(4):873–885, 2025.

[3] Nikolaj Glazunov. On non-Archimedean quantum mathematics and non-Archimedean (quantum) computation, 2026. doi:10.48550/arXiv.2601.05133.

[4] David E. Rohrlich. Multiplicities in Mordell–Weil groups. *J. Théor. Nombres Bordeaux*, 37(1):125–142, 2025. doi:10.5802/jtnb.1315.