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Bound on Lyapunov exponent in Charged and Rotating AdS Black Hole

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We investigate the bound on chaos for a charged probe particle in charged, rotating, AdS black hole backgrounds, particularly in the Kerr–Newman–AdS and Kerr–Sen–AdS spacetimes. By analyzing the particle's radial dynamics near the local extremum of the effective potential, we compute the Lyapunov exponent and examine potential violations of the bound on chaos proposed by Maldacena, Shenker, and Stanford.

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