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Quantum Larmor formula for uniformly accelerated charges

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With the settings in JHEP04(2024)065, we calculate the quantum radiation emitted by relativistic single-electron wavepackets in Minkowski vacuum. We show that the quantum radiation of a single-electron wavepacket at rest is exactly zero. For a uniformly accelerated electron, the quantum radiated power grows in time exponentially. This indicates that our linear approximation which breaks the reparameterization symmetry of the full action would break down if the evolution time is too long.

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