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Entanglement and thermalization

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In a quantum field theory, apparent thermalization can be a consequence of entanglement as opposed to scatterings. I will discuss how this can help to explain open puzzles such as the success of thermal models in electron-positron collisions. It turns out that an expanding relativistic string described by the Schwinger model (which also underlies the Lund model) has at early times an entanglement entropy that is extensive in rapidity. At these early times, the reduced density operator is of thermal form, with an entanglement temperature $T_\tau = \hbar/(2\pi k_B \tau)$, even in the absence of any scatterings.

Content type

Theory

Collaboration

Centralised submission by Collaboration

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