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Entanglement and thermalization in peripheral collisions¹

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The surprising emergence of apparent thermalization seen in data from high-energy proton-proton collisions at the Large Hadron Collider and in charged-current weak interactions at Fermilab is also observed in peripheral heavy ion collisions. A description of the possibility that this behavior in each case is due to the high degree of entanglement in the wave functions of the interacting systems will be presented. Examples using the large amount of data available from both the Relativistic Heavy Ion Collider and the Large Hadron Collider experiments support this proposed link between quantum entanglement and thermalization in peripheral heavy ion collisions.

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²Research in collaboration with C. Weber and J. Pan