

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Multipartition of Spatially Entangled Systems with Sine Square Deformation** ISAO MARUYAMA, Osaka university — We propose a method to decouple quantum systems without disturbing the Fermi sea, extending the sine-square deformation (SSD)[1,2] toward more general cases. This multipartition operation opens a way to real-time manipulation for separating the gapless Fermi liquid system spatially into several decoupled systems without losing quantum entanglement among them. As a demonstration of entanglement preservation, by solving the time-dependent Schrödinger equation numerically, we show that our method works well in entanglement dynamics of non-interacting tight-binding models on a one dimensional zigzag chain and a two dimensional square lattice. [1] A. Gendiar, et. al., Prog. Theo. Phys. 122. 953 (2009) [2] IM, et.al., Phys. Rev. B. 84. 165132 (2011) and references therein

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Date submitted: 08 Nov 2012

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