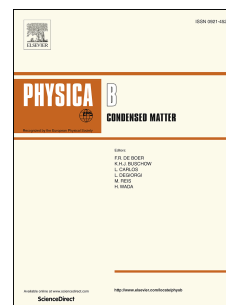


Accepted Manuscript

Tripartite quantum correlations in the renormalized space of Heisenberg-Ising spin- $\frac{1}{2}$ chain

Salman Khan, Kalimullah Khan



PII: S0921-4526(18)30444-7

DOI: [10.1016/j.physb.2018.06.044](https://doi.org/10.1016/j.physb.2018.06.044)

Reference: PHYSB 310952

To appear in: *Physica B: Physics of Condensed Matter*

Received Date: 16 February 2018

Revised Date: 21 June 2018

Accepted Date: 29 June 2018

Please cite this article as: S. Khan, K. Khan, Tripartite quantum correlations in the renormalized space of Heisenberg-Ising spin- $\frac{1}{2}$ chain, *Physica B: Physics of Condensed Matter* (2018), doi: 10.1016/j.physb.2018.06.044.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Tripartite quantum correlations in the renormalized space of Heisenberg-Ising spin-1/2 chain

Salman Khan^{†*} and Kalimullah Khan[‡]

[†] *Department of Physics, COMSATS Institute of Information Technology,
Chak Shahzad, Islamabad, Pakistan and*

[‡] *Department of Physics, Quaid-i-Azam University, Islamabad, Pakistan.*

(Dated: February 15, 2018)

Abstract

The dynamics of tripartite entanglement and tripartite quantum discord in the superposition of the two degenerate ground states of the Heisenberg-Ising spin-1/2 chain **with the increasing size of the system** are studied through quantum renormalization group (QRG) technique. It is shown that although, both the correlations exhibit quantum phase transition in the thermodynamics limit, however, quantum discord is more sensitive to the size of the system. Unlike the bipartite case, the tripartite correlations are maximum when the Ising coupling between the spins dominates the Heisenberg coupling. Interestingly enough, **it is found that the regions of entangled phase and product phase in the tripartite case are swapped with respect to the ones in the bipartite case.**

PACS numbers: 03.67.Mn, 03.65.Ud, 73.43.Nq, 75.10.Pq

Keywords: quantum renormalization-group; quantum correlations; quantum phase transitions; Heisenberg-Ising model

* sksafi@comsats.edu.pk

Download English Version:

<https://daneshyari.com/en/article/8160305>

Download Persian Version:

<https://daneshyari.com/article/8160305>

[Daneshyari.com](https://daneshyari.com)