

Referee 2

The author argues that in the FRLW cosmological model with a non-minimally coupled nonlinear spinor field as a matter field, a coordinate transformation from Cartesian coordinates to spherical coordinates generates changes in the energy-momentum tensor of the spinor field that have physical consequences. However, general relativity can be given in a coordinate-free formalism that don't contain coordinate transformations. I would like to learn why this is not the case in the theory under consideration. Perhaps the spinor affine connection can be modified so that the energy-momentum tensor don't depend nontrivially on the coordinate system.

My response

I am really thankful to him for this very important remark. I have added a new paragraph in “conclusion” which I have renamed “Conclusion and discussions” where I express my concern about the definition of spinor affine connection.

*As it was already noticed, the coordinate transformation from Cartesian to spherical coordinates gives rise to non-diagonal components of EMT that owe to spinor affine connections. This very fact suggests that the definition of spinor affine connections need if not modification then serious reconsideration. It should be noted that there were a few opinions regarding the generalization of Dirac spinor in general relativity proposed by Fock, Pauli, Sommerfeld, Wigner and others. We plan to address this issue in near future.*