Review report on a paper entitled

" **Rho-Tau Embedding of Statistical Models** "

By Jan Naudts and Jun Zhang

This paper discusses geometric perspectives on information divergence with reference to rho-tau embedding. The gauge freedom of the rho-tau formalism is established for a choice of rho and tau functions from the form of induced metric. Furthermore, it would be excellent if any physical notion associated with the gauge freedom is given. Authors mainly discuss a parametric case where a model is parametrized; there remains discussion for a nonparametric framework, cf. the discussion by Pistone and his colleagues. It would be nice to suggest any relevant perspectives connecting the parametric with the nonparametric framework. A necessary and sufficient condition for a deformed exponential model to be a hessian manifold is given in a simple statement.

Major comments

1. The deformed exponential model authors discuss can be connected with the idea of maximum entropy if the rho-tau divergence is decomposed into the cross and diagonal entropies? For this it might be necessary to consider a constrain by the escort expectation.

In the notation of the paper the arguments P and Q are used as random variables, for example, as in equation (1). However, in the standard notation P and Q are used to express probability measures, and so it would be very confusing for readers who work in probabilistic paradigms and applications.