

# Review of: "Quaternionic Bekenstein-Sanders Gauge Fields for TeVeS"

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Regarding the paper's overall idea, it is interesting enough to be published as a letter/article. However, there are some observations that can contribute to improving its presentation. The introduction is well-written and furnishes good physical motivations for the target model. A clear distinction between the previous achievements and the new proposals is made. The abstract gives a clear definition of the paper's objective.

Regarding typos, one can mention "gauge" transformation in the title. The section II presents the basis for a quaternion after eq. 2.1. Considering the notation, it would be interesting to explicitly highlight the fact that it has nothing to do with the space-time. Moreover, reinforcing the link between the mentioned non-Abelian nature of the symmetry and the quaternion properties can make the paper more accessible for a wider community of readers. In the equation 3.2, the metric  $g$  is defined, although its notation is not used anymore (In 3.5 it is written  $\tilde{g}$ ). It seems that 3.2 is not necessary for the discussion made between eqs 3.1 and 3.6. In eq. 3.6 there is an extra  $=$  symbol. Moreover, since it defines a scalar object, there are missing  $p_\mu$  factors to be contracted with  $B_\mu$ .

On the eq. 3.12, I am in doubt if there are  $e^{-2\phi}$  factors missing in the 5-dimensional Kaluza-Klein metric. On eq.3.13 there are  $+$  and  $-$  possibilities for the momentum in the fifth direction. What do they mean? Regarding the limit with  $g_{55} \rightarrow 0$ , just the phase with  $-$  sign seems to be well-behaved.

The appendices are very interesting and define important contributions. For example, the explicit association with a given possible realization of Yang-Mills field in standard formulation seems to be something interesting to be in the main part of the paper. It gives an explicit realization of one possibility associated with the main discussion of the article.