Abstract Submitted
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Bosonization of Weyl Fermions EDUARDO MARINO, UFRJ — The electron, discovered by Thomson by the end of the nineteenth century, was the first experimentally observed particle. The Weyl fermion, though theoretically predicted since a long time, was observed in a condensed matter environment in an experiment reported only a few weeks ago. Is there any linking thread connecting the first and the last observed fermion (quasi)particles? The answer is positive. By generalizing the method known as bosonization, the first time in its full complete form, for a spacetime with 3+1 dimensions, we are able to show that both electrons and Weyl fermions can be expressed in terms of the same boson field, namely the Kalb-Ramond anti-symmetric tensor gauge field. The bosonized form of the Weyl chiral currents lead to the angle-dependent magneto-conductance behavior observed in these systems.

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