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17 June 2018

To:
Editor of the Journal of Statistical Mechanics: Theory and Experiment,

Dear Editor,

We would like to submit an original scientific paper entitled:

Signatures of the symmetry breaking phenomenon in pre-seismic electromagnetic emissions

by

Y. Contoyiannis, S. M. Potirakis

to be considered for publication in JSTAT as an original paper.

We consider important for this paper to be published in JSTAT because it reports, for the first time in literature, a unique finding: a striking similarity, both in qualitative and quantitative terms, between the evolution over time of pre-seismic electromagnetic emissions in the MHz band and the evolution of a thermal system (3D-Ising model) as temperature drops regarding the distinct steps of the symmetry breaking (SB) phenomenon through a second order phase transition. We thus suggest that the SB phenomenon in the context of a second-order phase transition is a possible scenario for the preparation of a seismic event at the stage that MHz EME are emitted. Although it is difficult to detect all distinct steps of SB in a field recording due to limited statistics, a number of MHz pre-seismic electromagnetic emissions recordings prior to strong earthquakes have been identified to show behavior similar to the presented in the submitted paper, enhancing the findings of the specific work, and will be presented in a following paper along with findings related to trictitical behavior of pre-seismic electromagnetic emissions within a unified approach.

We also would like to state that the material of this work has not been previously published and that it is not under consideration for publication elsewhere.

Please find attached the electronic version of the original manuscript and Figures.

Hoping to hearing from you soon

Yours Sincerely

S.M. Potirakis