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Statistical measure of complexity in compact stars with global charge neutrality

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Recently, it has been suggested that a critical electrical field arises during the gravitational collapse of massive stars leading to a vacuum polarization. This, in turn, leads to the necessity of a reexamination of the gravito-electrodynamical properties of compact stars of the class of neutron stars. Rotondo, Rueda, Ruffini and Xue claim to have proved the impossibility of local charge neutrality and then solved the coupled system of the general relativistic Thomas-Fermi-Einstein-Maxwell equations for the structure of neutron stars. Within the same approach of Avellar and Horvath (2012) we have calculated how the global neutrality hypothesis affects the order/disorder of these systems for a simple equation of state. We show the relative preference of local vs. global conservation in terms of the obtained information content of the systems under consideration.

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