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Nambu-Jona-Lasinio model and its applications

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Message from the Guest Editor

This Special Issue, "Nambu-Jona-Lasinio model and its applications", will focus on the phenomenological aspects of the fermionic system with spontaneous chiral symmetry breaking. Y. Nambu (Nobel prize in physics, 2008) and G. Jona-Lasinio introduced a four-fermion interaction model to elementary particle physics based on an analogy with the BCS theory of superconductivity in the early 1960s. ... As an effective theory of QCD, light meson properties and quark-gluon matter under extreme conditions are often studied in the NJL model with some extensions. The NJL model is also used to study the inhomogeneous condensation of the fermionic system in condensed matter physics. A scale up model is applied to solve cosmological problems. The questions: how to calculate the condensation beyond the mean field application? how to evaluate the phase structure and critical phenomena under extreme conditions? are commonly asked in each field. There is a lot of work to be done to clarify all these questions and this Special Issue will be devoted to them.

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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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