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Quantum Information Applied in Neuroscience

Guest Editor:

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Institute for Advanced Study, Varna, Bulgaria

Deadline for manuscript submissions:
closed (31 December 2021)

Message from the Guest Editor

Dear Colleagues,

Qubits are the smallest physical carriers of quantum information. The quantum information contained in the quantum state Ψ of a qubit has some truly remarkable properties. Qubits can be transported from place to place similarly to classical bits, but each qubit cannot be cloned and delivered to multiple recipients. Multiple qubits, however, can be used to carry classical bits. Furthermore, the Bell and Kochen–Specker no-go theorems imply that quantum information is nonlocal and quantum correlations are enforced with superluminal speed. These fascinating properties of quantum information may not be reserved for manifestation only in modern quantum technologies, but may already have been employed for enhancement of the survival of evolving biological systems and boosting the power of their neural systems. In this Special Issue, we invite contributions that apply quantum information theory as a tool for investigation of open questions in neuroscience and elucidation of brain function.

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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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