



symmetry

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Quantum Technologies in Computing, Communication, Sensing and Imaging

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Message from the Guest Editor

Dear Colleagues,

We live in a digital world in which, thanks to ground-breaking discoveries in the field of quantum physics, information can be exchanged via networks. This has come to be known as the first quantum revolution. The world has become binary, and now consists of zeros and ones. With the rapid development of technologies that manipulate single quantum objects, we are today entering a new era. This new quantum world is not binary. Here, information can, according to the principle of superposition, be encoded as both zeros and ones at the same time. This is the second quantum revolution. Apart from superposition, another principle that quantum technologies rely on is entanglement, which links particles across large distances.

The potential of these new technologies cannot be underestimated since it includes an exponential decrease in processing time, incontrovertible protection of information, highly accurate measurements, 3D imaging, imaging beyond the line of sight, and gravity mapping as just some of its prospective benefits. The likely applications for each of these quantum technologies, or their combinations, include computing, navigation, transport, healthcare...



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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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