Editorial

Foreword: Proceedings of the 4th International Electronic Conference on on Entropy and Its Applications †

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This volume presents papers contributed to the 4th E-Conference on Entropy (ECEA-4), of November 2017. In addition, there will be some invited papers that were subsequently fully reviewed, before publication in *Entropy*.

One of the pleasing aspects of the E-Conference was the vigorous discussion, feedback, mutual learning and vigorous debate that took place on the conference bulletin board. This issue of *Proceedings* gives the participants a vehicle for disseminating their ideas in a more polished form. Entropy lies at the heart of modern applied science, as well as fundamental science foundations that are regularly re-examined. In this issue there will be both types of paper. Entropy relates to the big fundamental questions of our time:

Is quantum mechanics an emergent theory from statistical coarse-graining of something deeper?
What is the thermodynamic basis of early cosmological inflation and of the current dark energy dominated universe?
Is there a physical basis to consciousness?

Entropy relates also to the great engineering opportunities of our time:

Can we build a useful stable quantum computer?
Can we take some of the mystery out of the high performance of artificial intelligence through deep learning?
How can we improve controllability of hot plasma fusion devices?
Can we synthesize exotic and useful materials in a more energy-efficient way?

Although we do not expect the *Proceedings* to contribute one of the major breakthroughs, some of the ideas presented here should at least stimulate us to review our own conceptions and to promote a network of discussion on how to make practical gains. I am grateful to all contributors.