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EXPLORING NOVEL APPLICATIONS AND ADVANCES IN LATTICE BOLTZMANN METHODS

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ABSTRACT

The lattice Boltzmann method (LBM), known for its computing efficiency and adaptability in modelling fluid flows, has received broad popularity in a variety of scientific and engineering disciplines [1]. This mini-symposium aims to provide a dynamic venue for LBM academics and practitioners to exchange their ideas, findings, and innovations. This event will encourage constructive talks and develop cooperation in the following important areas, with a major emphasis on innovative applications and cutting-edge techniques:

1. Advanced LBMs - Contributors will reveal ways for boosting simulation accuracy, stability, and efficiency by emphasizing recent methodological breakthroughs.

2. Multiphysics and complex systems - The numerous uses of LBM in modelling complicated multiphysics phenomena and complex systems will be covered in this theme area. Attendees may expect to hear about multiphase flows, fluid-structure interactions, and beyond.

3. High-performance computing - Experts will discuss how to optimize code for contemporary architectures and use parallel computing approaches.

4. Emerging applications - New applications emerge on a regular basis. Explorations of LBM's application frontiers, including biological systems, renewable energy, and beyond, will be discussed.

5. Validation and benchmarking - Maintaining the reliability of simulation findings is crucial. Contributors will explain effective techniques for verifying LBM simulations and benchmarking against analytical solutions and experimental data in this section.

REFERENCES

[1] T. Kruger, H. Kusumaatmaja, A. Kuzmin, O. Shardt, G. Silva, and E. M. Viggen, The lattice Boltzmann method: Principles and Practice (Springer International Publishing, 2017).