



Contributed Talk, Tuesday, May 7, 5:00 p.m. - 5:20 p.m., ICAMS<sup>2</sup> session: **T4**

**Multiscale modelling of solidification phenomena: the coupled phase field-fluctuating lattice Boltzmann method**

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Modelling physical phenomena across the scales is a veritable challenge for scientific computing. Due to the complexity of the problems involved, rigorous and predictive bottom-up approaches are quite rare and largely remain a task for future research. In this context, it is of great interest to develop models which allow to efficiently incorporate the essential effects originating from a large number of interactions at a smaller scale in a description of the system behavior at a larger scale. In this talk, we present such an approach via a coupling of the Phase Field and Lattice Boltzmann methods. The new method combines different transport processes such as diffusion, fluid flow and the advective transport of the solidifying body within the same framework. As shown in a number of examples, this allows the study of a large range of interesting physical phenomena related to solidification.