



Contribution ID: 366

Type: **Talk**

## Metadynamics Remedies for Topological Freezing

*Tuesday, July 26, 2016 6:10 PM (20 minutes)*

Metadynamics is a class of powerful algorithms in which the time evolution of a system is modified introducing a history-dependent potential associated with the past values of observables of choice. This has the effect of driving the system away from previously occupied states, ultimately speeding up the evolution of the system. These methods are widely used in biochemistry and computational physics, and are especially suitable for solving problems in which the free energy presents a many-minima landscape. In this talk I will show a successful application of Metadynamics to the critical slowing down of the topological charge in CP(N-1) models, discussing the scaling of the performances with volume and lattice spacing, limitations and future improvements, and giving also a first glance of applications to lattice QCD.

**Primary author:** Mr SANFILIPPO, Francesco (University of Southampton)

**Co-authors:** LAIO, Alessandro (Sissa, Trieste Italy); Prof. MARTINELLI, Guido (Universita' di Roma "La Sapienza" and Cern)

**Presenter:** Mr SANFILIPPO, Francesco (University of Southampton)

**Session Classification:** Algorithms and Machines

**Track Classification:** Algorithms and Machines