

New methods for continuous matrix product states

Martin Ganahl
Perimeter Institute
Waterloo Canada

DATE: Thursday, September 13, 2018

TIME: 11:00 AM

PLACE: C2045

ABSTRACT: Over the past several years, continuous Matrix Product States (cMPS) have emerged as a powerful tool for obtaining non-perturbative ground state and excited state properties of interacting quantum field theories in $(1+1)d$.

At the heart of the cMPS lies an efficient parametrization of many-body wavefunctions directly in the continuum, that enables one to obtain ground states of QFTs in $(1+1)d$.

In the first half of this talk I will give an introduction to the formalism of cMPS. In the second part, I will discuss new variational optimization methods for cMPS, and will explain how so-called basis-spline functions can be combined with a cMPS parametrization. I will show some new results for systems without translational invariance, and will briefly explain how lattice MPS methods can be utilised within the framework of cMPS calculations.

ALL ARE WELCOME!