

Next-to-leading order $n\text{PI}$ calculations in scalar theories

Tuesday, July 12, 2016 3:00 PM (30 minutes)

Previous calculations have shown that the 2 particle irreducible (2PI) effective theory is a promising method to study strongly coupled systems, for which non-perturbative techniques are needed. Calculations at the 3 loop level show improved convergence, relative to perturbative results. We present results in ϕ^4 theory at the 4 loop level which show that convergence breaks down at large coupling. This indicates the need for higher order effective theories.

4PI calculations in 4 dimensions have never been attempted, because no method is known to deal with the overlapping sub-divergences that appear in these theories. We present a new technique to renormalize the 4PI effective theory, based on a renormalization group approach.

Primary author: CARRINGTON, Margaret (Brandon University)

Presenter: CARRINGTON, Margaret (Brandon University)

Session Classification: Parallel Track 3