

SEMPARIS – Séminaires en région parisienne

<http://string.lpthe.jussieu.fr/semparis/>

Cours

Mardi 3 Décembre 2019, 11 :30

LPTENS, LPT Library

Domaines : hep-th

Titre : *The epsilon expansion meets semiclassics*

Orateur : **Gabriel Francisco Cuomo**

Résumé : *In this talk I will study the scaling dimension of the lightest operator of charge n in the $U(1)$ model at the Wilson-Fisher fixed point in $4 - \varepsilon$ dimensions. Even for a perturbatively small fixed point coupling λ , standard perturbation theory breaks down for sufficiently large λn . Treating λn as fixed for small λ , I will show that the scaling dimension can be successfully computed through a semiclassical expansion around a non-trivial trajectory, resulting in a series in the coupling whose coefficients are fixed functions of λn . I will discuss explicitly the computation of the first two orders in the expansion. The result, when expanded at small λn , perfectly agrees with all available diagrammatic computations. The asymptotic at large λn reproduces the systematic large charge expansion, recently derived in CFT. Similar results can be derived in the $U(1)$ model in $3 - \varepsilon$ dimensions. I will briefly comment on the application of similar ideas in the calculation of other observables, such as three-point functions of charged operators.*
