

# SEMPARIS – Séminaires en région parisienne

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## Séminaire de physique des particules et de cosmologie

**Mardi 22 Mai 2018, 16 :00**

IPHT, Salle Claude Itzykson, Bât. 774

Domaines : hep-ph

Titre :  $\lambda\phi^4$  Theory I : The Symmetric Phase Beyond NNNNNNNLO

Orateur : **Marco Serone ( SISSA, Italie )**

Résumé : *Perturbative series in quantum field theory associated to certain paths of steepest-descent (so called Lefschetz thimbles) can be shown to be Borel resummable. This allows us to show that a large class of scalar field theories in  $d < 4$  are Borel resummable. As an example we study in detail the  $\lambda\phi^4$  theory in two dimensions in the  $Z_2$  symmetric phase. We extend the results for the perturbative expansion of several quantities up to  $N^8LO$  and show how the behavior of the theory at strong coupling can be recovered successfully using known resummation techniques. The results are in very good agreement (and with comparable precision) with those obtained by other non-perturbative approaches, such as lattice simulations and Hamiltonian truncation methods.*

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