

MAP-fis Essay Proposal, 2015-2016

(please write in English)

Supervisor

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Title

Melin amplitudes in minimal models

Area

(Materials, Optics, Condensed Theory, High Energy Theory,...);

High Energy Physics

Summary of Proposal

The goal of this project is to study Melin amplitudes in Conformal Field Theories (CFT) [1,2] and explore the analogy between Melin amplitudes and scattering amplitudes [3]. After reviewing the subject the student should consider the Melin amplitudes for CFT Minimal models [4], analyzing and extending the recent results derived in [5]. The goal is to search for simple patterns to see if we can learn how to guess the result directly in Mellin space, therefore devising an alternative way of computing conformal correlation functions in minimal models.

References

(to allow students first look at topic)

- [1] G. Mack, “D-independent representation of Conformal Field Theories in D dimensions via transformation to auxiliary Dual Resonance Models. Scalar amplitudes”, arXiv:0907.2407 [hep-th].
- [2] G. Mack, “D-dimensional Conformal Field Theories with anomalous dimensions as Dual Resonance Models”, Bulg.J.Phys. 36 (2009) 214-226, arXiv:0909.1024 [hep-th].
- [3] J. Penedones, “Writing CFT correlation functions as AdS scattering amplitudes”, JHEP 1103 (2011) 025, [arXiv:1011.1485 [hep-th]].
- [4] P. Di Francesco, P. Mathieu, D. Sénéchal, “Conformal Field Theory”, Springer.
- [5] D.A. Lowe, “Mellin transforming the minimal model CFTs: AdS/CFT at strong curvature”, arXiv:1602.05613 [hep-th].