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Irregular Kac-Moody representations, KZ-equations and Gaiotto-Teschner modules

Tuesday, June 17, 2025 4:00 PM (1 hour)

In this talk, I will present irregular representations of Kac-Moody algebras where we restrict ourselves to the sl(2,C) case. I show how such irregular representations correspond to irregular Gaiotto-Teschner representations of the Virasoro algebra. The associated KZ equations for conformal blocks with one irregular operator at infinity and their integral representations are derived. By connecting to 2d Liouville theory, I will show how the conformal blocks governed by our irregular KZ equation correspond to 4d Argyres-Douglas theories with surface operator insertions. The corresponding flat connections describe braiding between such operators on the Gaiotto curve.

Presenter: HAGHIGHAT, Babak