



Contribution ID: 102

Type: **Talk**

# The density of state approach to the sign problem

*Thursday 2 August 2018 14:00 (30 minutes)*

Approaches to the sign problem based on the density of states have been recently revived by the introduction of the LLR algorithm, which allows us to compute the density of states itself with exponential error reduction. In this work, after a review of the generalities of the method, we show recent results for the Bose gas in four dimensions, focussing on the identification of possible systematic errors and on methods of controlling the bias they can introduce in the calculation.

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**Session Classification:** Vacuum structure and confinement

**Track Classification:** A: Vacuum structure and confinement