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Friday, March 23rd, 2018

AET 3.328

2:00 PM

Virial Expansion for the Tan contact and Beth-Uhlenbeck Formula from 2D SO(2,1) Anomalies

The relationship between SO(2,1) conformal anomalies and the virial expansion for 2D Fermions with contact interactions is explored, using recently developed path-integral methods. In the process, the Beth-Uhlenbeck formula for the shift of the second virial coefficient is obtained, as well as a virial expansion for the Tan contact for those systems. A possible extension of these techniques for higher order shifts is discussed, as well as possible applications for the analysis of similar systems (Anyons in particular). While the emphasis will be in the logical structure of this framework, a progress report on numerical aspects will also be given. A brief mention will be made of recent results on a mapping of 2D two-body SO(2,1) anomalies into 1D three-body SO(2,1) anomalies.

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