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Modular Properties of Generalised Gibbs Ensembles

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We investigate the modular properties of Generalised Gibbs Ensembles (GGEs) in two dimensional conformal field theories. These are obtained by inserting higher spin charges in the expressions for the partition function of the theory. We investigate the particular case where KdV charges are inserted in the GGE. We first determine an asymptotic expression for the transformed GGE. This expression is an expansion in terms of the zero modes of all the quasi-primary fields in the theory, not just the KdV charges. While these charges are non-commuting they can be re-exponentiated to give an asymptotic expression for the transformed GGE in terms of another GGE. As an explicit example we focus on the Lee-Yang model. We use the Thermodynamic Bethe Ansatz in the Lee-Yang model to first replicate the asymptotic results, and then find additional energies that need to be included in the transformed GGE in order to find the exact modular transformation.

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