Network models, quenched quantum gravity, and critical behavior at quantum Hall transitions

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Abstract:

We consider network models for quantum Hall transitions, and incorporate a type of geometric disorder previously overlooked. We argue that in the continuum this leads to an effective description in terms of a conformal field theory coupled to quenched 2D quantum gravity. This coupling changes critical behavior at the transition and may partially explain discrepancy between the values of critical exponents obtained in experiments and in numerical simulations of network models without the geometric disorder.

References

I.A. Gruzberg, A. Kluemper, W. Nuding, A. Sedrakyan, arXiv:1604.0684.