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**Tuesday, February 9, 2021, at 10:00 (Boston)
15:00 (UK/Eire) 16:00 (C.Europe) 23:00 (China)
Mathematical Picture Language Seminar**

Zoom at: <https://harvard.zoom.us/j/779283357?pwd=MitXVm1pYUIJVzZqT3lwV2pCT1ZUQT09>

Many-body localization near the critical point
John Imbrie, University of Virginia

Abstract: I will examine the many-body localization (MBL) phase transition in one-dimensional quantum systems with quenched randomness. Having demonstrated the existence of the MBL phase at strong disorder, under a level-statistics assumption, I will focus on the nature of the transition out of this phase, using an approximate strong-disorder renormalization group. In this approach, the phase transition is due to the so-called avalanche instability of the MBL phase. I show that the critical behavior can be determined analytically within this RG. The RG flow near the critical fixed point is qualitatively similar to the Kosterlitz-Thouless (KT) flow, but there are important differences, and so this MBL transition is in a universality class that is distinct from KT. The divergence of the correlation length corresponds to critical exponent $\nu \rightarrow \infty$, but the divergence is weaker than for the KT transition. This is joint work with Alan Morningstar and David Huse.

