

Abstract Submitted
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Zero Droplet Stiffness Exponent: Probing Short Range Spin Glasses with Avalanches Induced by Long Range Interactions GERGELY ZIMANYI, Physics Department, UC Davis, FERENC PAZMANDI — We probe the droplet excitations in short range spin glasses by adding a perturbative long range interaction that decays with distance as a power law: J/r^σ . It is shown that if the power law exponent σ is smaller than the spatial dimension d , the perturbation induces large scale avalanches which roll until they force the system to develop a pseudo gap in the excitation spectrum of the stabilities. This makes the perturbative long range interactions relevant for $\sigma < \sigma_c = d$. The droplet theory predicts that the critical exponent σ_c depends on the droplet stiffness exponent as $\sigma_c = d - \theta$. Combining these two results leads to a zero stiffness exponent $\theta = 0$ in the droplet theory of short range spin glasses.

Gergely Zimanyi
Physics Department, UC Davis

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