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Mean field study of disordered spin- $\frac{1}{2}$ antiferromagnetic systems VLADIMIR DOBROSAVLJEVIC, SEN ZHOU, Florida State University, EDUARDO MIRANDA, Universidade Estadual de Campinas — We present a mean field theory picture of disordered spin- $\frac{1}{2}$ antiferromagnetic system as a function of the degree of disorder, in connection to the insulating doped semiconductors. The system is a resonant valence bond (RVB) liquid state at zero disorder, and a possible RVB glass state when the disorder is finite but weak. For a highly disordered system, we show that the essential physics is the formation and decimation of strongly coupled bonds, and the thermodynamics shows an effective power-law singularity, in qualitative agreement with renormalization group result of Bhatt and Lee.

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