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Magnetic Excitations in Random Anisotropic Magnets

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Abstract: A study is made for the magnetic excitations and their Anderson localization properties for a Heisenberg ferromagnet with random anisotropic fields. The system is assumed to be in a strong applied field so that complete spin alignment is established. The magnetic excitations, i.e., the harmonic spin waves, are computed using coherent-field-anisotropy approximation (a version of coherent potential approximation of the electronic problem). The spin wave shift and damping are calculated using the computed coherent field which is a complex function of energy approximating the random medium as a mean field level. The localization of the excitations are calculated by adopting the analogous results of the electronic problem. The model investigated here can be applicable to amorphous magnets in the low energy limit.

 [Keywords](#)
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