DIFFUSIVE REGIME FOR CRITICAL SOUND ATTENUATION AND DISPERSION IN MAGNETS

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We consider a new regime for sound propagation in magnetic systems above the critical point. On the basis of a general statistical model including a flow of energy between spin and lattice subsystems we found that there is a region of parameters where the sound attenuation and dispersion can be expressed in a similar way as for noncritical systems for which only the heat conduction matters. Contrary to the classical heat diffusion case in the critical magnetic system both the specific-heat, entering the reduced frequency, as well as the effective amplitude are frequency and temperature dependent reflecting the critical singularities present in the system near its critical point.

9.7 cm

13.4 cm

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