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Models of two level systems for anisotropic glassy materials¹ DRAGOS-VICTOR ANGHEL, IRINA MIHAELA DUMITRU, ALEXANDRU GEORGE NEMNES, Horia Hulubei National Institute of Physics and Nuclear Engineering, DMITRII CHUROCHKIN, Faculty of Mathematical and Physical Sciences, University of Chile — We use an extended version of the standard tunneling model to explain the sound absorption in anisotropic glassy materials and heat transport in mesoscopic slabs and bridges. The glassy properties are determined by an ensemble of two level systems (TLS). In our model a TLS is characterized by a 3×3 symmetric tensor, [T], which couples to the strain field, [S], through a $3 \times 3 \times 3 \times 3$ tensor of coupling constants, [[R]]. The structure of [[R]] reflects the symmetry of the host lattice. We also propose microscopic theoretical methods and models of TLS by which we test some of the most well known models of glassy materials, together with our own model.

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