Magnetoelastic behavior in Pt-base tetragonal systems

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Energy conversion effects are important in the design of efficient devices; they also involve a direct conversion between magnetic and mechanical energy – the so-called magnetoelasticity, which takes place in various applications such as micro-pumps, weak-field detectors, force sensors, or magneto-acoustically driven low-energy demanding electronics. Particularly, the magnetoelasticity has been thoroughly studied in high-symmetry systems, including the rare-earth-based Laves phases or 3d-element-based ferromagnets.

Here, we focus on magnetoelastic behavior in tetragonal Pt-based systems, which are able to provide a stronger magnetoelastic response, focusing on the behavior of the ferromagnetic and antiferromagnetic phases. Based on the *ab-initio* calculations, we discuss the relation between the magnetoelasticity and magnetic ordering with the aim of making the link of electronic structure changes and resulting magnetoelastic behavior. In addition, we discuss the modeling of the magnetoelastic behavior.

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