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Anomalous Nernst Effect with Magnetocrystalline Anisotropy (110)[1] CARLOS CHESMAN, JOSE COSTA NETO, Department of Physics - UFRN, DEPARTMENT OF PHYSICS - UFRN TEAM — When a ferromagnetic material is submitted to a temperature gradient and the magnetic field generates voltage on the edges of the samples, this is called the Anomalous Nernst Effect (ANE). The Heusler alloys that currently exhibit this effect are the most promising for spintronics and spin caloritronics. In this study we perform a theoretical investigation of voltage curves associated to the ANE, when the material displays magnetocrystalline anisotropy for experimental results in two configurations, ANE versus applied magnetic field and planar angle variations of ANE. We analyzed three types of magnetocrystalline anisotropy: cubic anisotropy (100) with C4 symmetry, uniaxial anisotropy with C2 symmetry and cubic anisotropy (110). The aim was to prove that cubic anisotropy (110) is equivalent to anisotropy (100) combined with uniaxial anisotropy. Theoretical fitting of experimental ANE data demonstrates this total equivalence and that a new interpretation with the use of cubic anisotropy (110) may be due to the atomic arrangement of the so-called full-Heusler. Comparative analyses of Co_2FeAl and Co_2MnGe alloys will be presented.

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