

Abstract Submitted  
for the MAR14 Meeting of  
The American Physical Society

**Barocaloric effect in rare earth compounds**<sup>1</sup> NILSON ANTUNES DE OLIVEIRA, Universidade do Estado do Rio de Janeiro — The magnetic barocaloric effect, which is characterized by the isothermal entropy change and adiabatic temperature change upon pressure variation can be a very useful to improve the performance of magnetic refrigerator. In this work, we discuss the barocaloric effect in rare earth compounds. To this end we use a model of interacting localized magnetic moments [1]. In the first part of the work we make a systematic analysis in terms of the model parameters, considering the simplest case whose angular momentum is  $1/2$ . Our calculations show that the behavior of the barocaloric quantities can be normal, inverse or anomalous. In the second part of the work, we apply the model to describe the barocaloric effect in the compounds  $\text{RCO}_2$ ,  $\text{Gd}_5\text{Si}_2\text{Ge}_2$  and  $\text{Tb}_5\text{Si}_2\text{Ge}_2$ . Our theoretical calculations for  $\text{Gd}_5\text{Si}_2\text{Ge}_2$  is in a reasonable agreement with the available experimental data [2]. Our calculations for the other compounds, need experimental data to be confirmed.

[1] N. A. de Oliveira, P. J. von Ranke Phys. Rep. 489, 89 (2010).

[2] Yuce et al . Appl. Phys. Lett., 101, 071906 (2012).

<sup>1</sup>CNPq, FAPERJ

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Date submitted: 11 Nov 2013

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