

First Joint Meeting Brazil Italy of Mathematics  
Special Session: Probability and Statistical Mechanics

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**Title:** Ferromagnetic spin models with deterministic and nonconstant external fields

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**Abstract:** We discuss recent results for ferromagnetic spin systems with deterministic and nonconstant external fields. For regular and amenable lattices ( $\mathbb{Z}^d$  e.g.), ferromagnetic Ising models present (or not) phase transitions when the field decays to zero at infinity according to the decay rate. Some of the results obtained are theorems from the Brazil-Italy cooperation involving researchers from both countries.