Universidade Federal de São Carlos
Departamento de Matemática

Seminários de Geometria de São Carlos

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Falará sobre

Lusternik-Schnirelman and Morse theory for the Van der Waals-Cahn-Hilliard equation and system with volume constraint

We give a multiplicity result for solutions of the Van der Waals-Cahn-Hilliard two-phase transition equation and multiple phase transition systems with volume constraints on a closed Riemannian manifold. Our proof employs some results from the classical Lusternik–Schnirelman and Morse theory, together with a technique, the so-called *photography method*, which allows us to obtain lower bounds on the number of solutions in terms of topological invariants of the underlying manifold. The setup for the photography method employs recent results from Riemannian clusters's isoperimetry for small volumes. The results presented here are the object of o series of papers made in collaboration with João Henrique Andrade (IME-USP, São Paulo, SP, Brazil), Vieri Benci (Univ. Pisa, Italy), Kackeline Conrado (UERJ, Rio de Janeiro, RJ, Brazil), Dario Corona (Univ. Camerino, Italy), Luis Eduardo Osorio Acevedo (Univ. Technologica de Pereira, Pereira, Colombia), Paolo Piccione (IME-USP, São Paulo, SP, Brazil), Reinaldo Resende de Oliveira (IME-USP, São Paulo, SP, Brazil).

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