

KINKS AND DOMAIN WALLS

An Introduction to Classical and Quantum Solitons

Kinks and domain walls are the simplest kind of solitons and hence they are invaluable for testing various ideas and for learning about non-perturbative aspects of field theories. They are the subject of research in essentially every branch of physics, ranging from condensed matter to cosmology.

This book is a pedagogical introduction to kinks and domain walls and their principal classical and quantum properties. The book starts out by discussing classical solitons, building up from examples in elementary systems to more complicated settings. The quantum properties are introduced, together with discussion of the very fundamental role that solitons may play in particle physics. The formation of solitons in phase transitions, their dynamics, and their cosmological consequences are further discussed. The book closes with an explicit description of a few laboratory systems containing solitons.

Kinks and Domain Walls includes several state-of-the-art results (some previously unpublished), providing a handy reference. Each chapter closes with a list of open questions and research problems. This book will be of great interest to both graduate students and academic researchers in theoretical physics, particle physics and condensed matter physics. This title, first published in 2007, has been reissued as an Open Access publication on Cambridge Core.

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