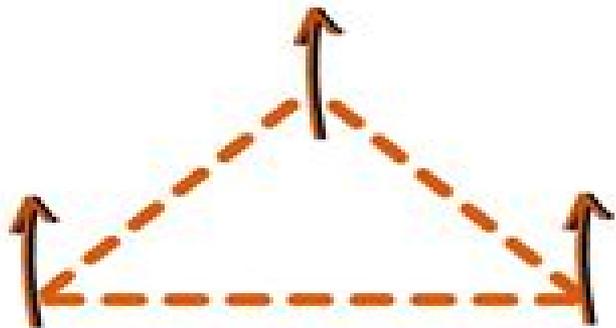
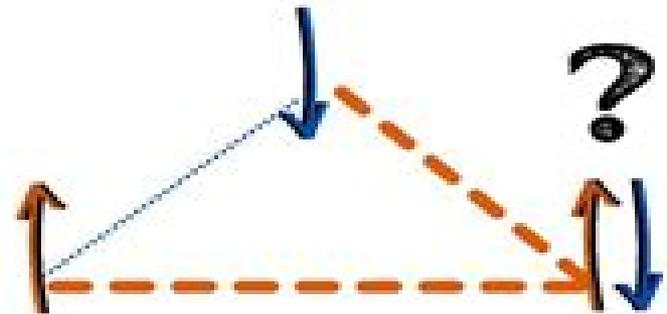


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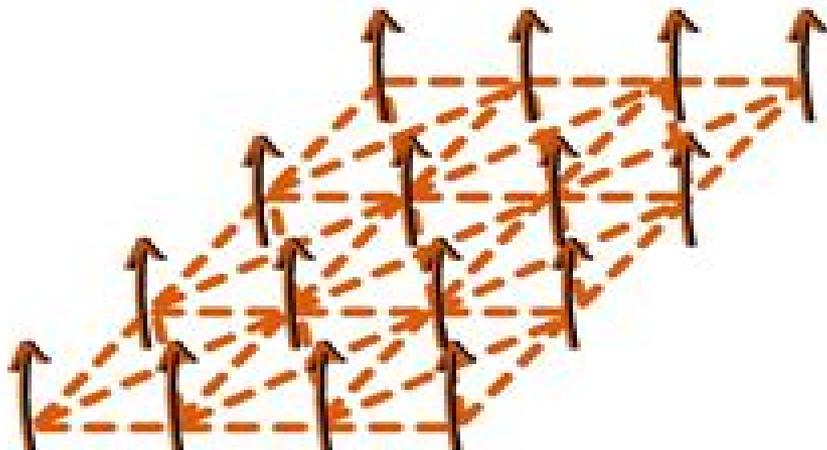
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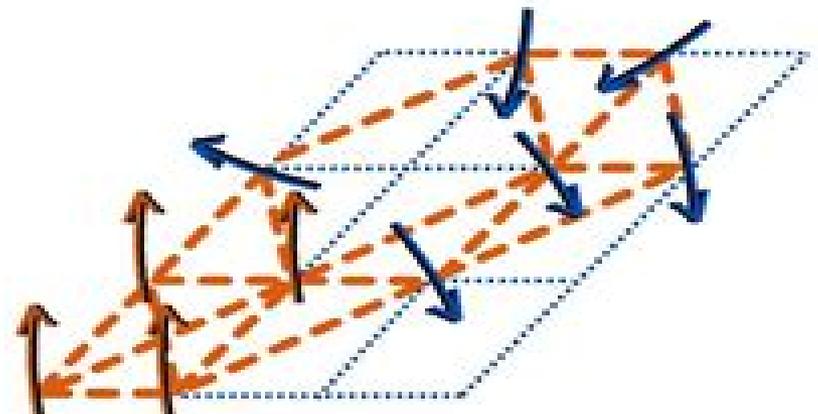
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manner this exciting new area to the mathematically minded reader It requires no knowledge whatsoever of any physics and contains proofs in complete detail of much of what is rigorously known on spin glasses at the time of writing

Statistical Physics of Spin Glasses and Information Processing Hidetoshi Nishimori, 2001 Spin glasses are magnetic materials Statistical mechanics a subfield of physics has been a powerful tool to theoretically analyse various unique properties of spin glasses A number of new analytical techniques have been developed to establish a theory of spin glasses Surprisingly these techniques have turned out to offer new tools and viewpoints for the understanding of information processing problems including neural networks error correcting codes image restoration and optimization problems This book is one of the first publications of the past ten years that provide a broad overview of this interdisciplinary field Most of the book is written in a self contained manner assuming only a general knowledge of statistical mechanics and basic probability theory It provides the reader with a sound introduction to the field and to the analytical techniques necessary to follow its most recent developments

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Spin Glass Theory And Beyond: An Introduction To The Replica Method And Its

Applications Marc Mezard, Giorgio Parisi, Miguel Angel Virasoro, 1987-11-01 This book contains a detailed and self contained presentation of the replica theory of infinite range spin glasses The authors also explain recent theoretical developments paying particular attention to new applications in the study of optimization theory and neural networks About two thirds of the book are a collection of the most interesting and pedagogical articles on the subject

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Jesi, 2016-06-28 This thesis addresses the surprising features of zero temperature statics and dynamics of several spin glass models including correlations between soft spins that arise spontaneously during avalanches and the discovery of localized states that involve the presence of two level systems It also presents the only detailed historiographical research on the spin glass theory Despite the extreme simplicity of their definition spin glasses display a wide variety of non trivial behaviors that are not yet fully understood In this thesis the author sheds light on some of these focusing on both the search for phase transitions under perturbations of Hamiltonians and the zero temperature properties and responses to external stimuli After introducing spin glasses and useful concepts on phase transitions and numerics the results of two massive Monte Carlo campaigns on three dimensional systems are presented The first of these examines the de Almeida Thouless transition and proposes a new finite size scaling ansatz which accelerates the convergence to the thermodynamic limit The second

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Vector Spin Glasses Auditya Sharma, 2011

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were found to be as useless as they were exotic They have nevertheless been recognized as paradigmatic examples of complex systems with applications to problems as diverse as neural networks amorphous solids biological molecules social and economic interactions information theory and constraint satisfaction problems This book presents an encyclopaedic overview of the broad range of these applications More than 30 contributions are compiled written by many of the leading researchers who have contributed to these developments over the last few decades Some timely and cutting edge applications are also discussed This collection serves well as an introduction and summary of disordered and glassy systems for advanced undergraduates graduate students and practitioners interested in the topic

Statics and Dynamics of a Model for Spin-glasses Amitabha Chakrabarti, 1987 **Spin Glass Theory and Far Beyond: Replica Symmetry Breaking After 40 Years** Patrick Charbonneau, Enzo Marinari, Giorgio Parisi, Federico Ricci-Tersenghi, Gabriele Sicuro, Francesco Zamponi, Marc Mezard, 2023-07-27

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