

Viewing the World through Spin Glasses

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PREFACE

Viewing the World through Spin Glasses

This special issue of *Journal of Physics A: Mathematical and Theoretical* collects papers by speakers and participants of the conference ‘Viewing the World through Spin Glasses’, held in Oxford (UK) on 31 August and 1 September 2007 in honour of Professor David Sherrington. It also includes contributions by many other active researchers in the field of spin glasses and related problems.

The theory of spin glasses has a history of more than 30 years and continues to develop within itself as well as into an unexpectedly vast range of interdisciplinary subjects, including neural networks, error-correcting codes, optimization problems and social problems. Most of these amazing developments have their formal basis in the ground-breaking work of David Sherrington with Scott Kirkpatrick, centred on the SK model and the techniques devised to analyse it via the replica method. In this ‘classic-of-classics’ paper, a theoretical paradigm was suddenly established which became the common tool of analysis for thousands of papers in the following decades. It also led to deep developments in probability theory, through the efforts to understand the enigmatic Parisi solution of the SK model. The work of Professor Sherrington will continue to be an infinite source of our inspiration in many years to come.

The purpose of the conference ‘Viewing the World through Spin Glasses’ was to provide an overview of the present status of the fields which Professor Sherrington initiated, on the occasion of his 65th birthday, organized by John Cardy, Juan P Garrahan and the present Guest Editors. The first contribution in this special issue, by Professor Paul Goldbart, reflects his salute delivered at the conference dinner, and conveys its atmosphere very well. The papers that follow, ordered by the date of acceptance, represent the current activities of leading researchers in spin glasses and related fields, and we expect these to serve as milestones for future developments.

We thank all the authors of this special issue and the participants of the conference for their valuable contributions.

Ton Coolen, Hidetoshi Nishimori, Nicolas Sourlas and Michael Wong

Guest Editors