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Mécanique quantique

Rodolfo GAMBINI, Jorge PULLIN. — **Loops, knots, gauge theories and quantum gravity.** — Cambridge monographs on mathematical physics. — Un vol. broché, 17×25 , de xvi, 321 p. — ISBN 0-521-47332-2. — Prix: £27.95. — Cambridge University Press, Cambridge, 2000.

This text begins with a detailed review of loop representation theory. It then goes on to describe loop representations in Maxwell theory, Yang-Mills theories as well as lattice techniques. Applications in quantum gravity are then discussed in detail. Following chapters move on to consider knot theories, braid theories and extended loop representations in quantum gravity. A final chapter assesses the current status of the theory and points out possible directions for future research.

Masaki KASHIWARA, Tetsuji MIWA, (Editors). — **Physical combinatorics.** — Progress in mathematics, vol. 191. — Un vol. relié, $16,5 \times 24$, de viii, 317 p. — ISBN 0-8176-4175-0. — Prix: SFr. 128.00. — Birkhäuser, Boston, 2000.

This work is concerned with combinatorial aspects arising in the theory of exactly solvable models and representation theory. Recent developments in integrable models reveal an unexpected link between representation theory and statistical mechanics through combinatorics. For example, Young tableaux, which describe the basis of irreducible representations, appear in the Bethe Ansatz method in quantum spin chains as labels for the eigenstates of Hamiltonians. Taking into account the various criss-crossing among mathematical subjects, "Physical Combinatorics" presents new results and exciting ideas from three viewpoints: representation theory, integrable models, and combinatorics. This volume will be of interest to mathematical physicists and graduate students in the above-mentioned fields. Contributors to the volume: T. H. Baker, O. Foda, G. Hatayama, Y. Komori, A. Kuniba, T. Nakanishi, M. Okado, A. Schilling, J. Suzuki, T. Takagi, D. Uglov, O. Warnaar, T.A. Welsh, A. Zabrodin.

Economie, recherche opérationnelle, jeux

Jerzy A. FILAR, Vladimir GAITSGORY, Koichi MIZUKAMI, (Editors). — **Advances in dynamic games and applications.** — Annals of the International Society of Dynamical Games, vol. 5. — Un vol. relié, 16×24 , de xvii, 459 p. — ISBN 0-8176-4002-9 — Prix: SFr. 188.00. — Birkhäuser, Boston, 2000.

The book focuses on various aspects of dynamic-game theory, providing authoritative, state-of-the-art information and serving as a guide to the vitality of the field and its applications. The chapters are based on presentations at the 7th International Symposium on Dynamic Games and Applications held in Kanagawa, Japan. A variety of topics of current interest are presented. *Topics and features:* robust control design and H-infinity; pursuit-evasion games; recent game-theoretic developments; select applications in ecology and environmental science.

Biologie et sciences du comportement

Jacques ISTAS. — **Introduction aux modélisations mathématiques pour les sciences du vivant.** — Mathématiques & applications, vol. 34. — Un vol. broché, $15,5 \times 23,5$, de viii, 160 p. — ISBN 3-540-67254-0. — Prix: DM 60.00. — Springer, Paris, 2000.

Le but de cet ouvrage est de présenter un panorama de différentes méthodes mathématiques utilisées pour la modélisation de phénomènes issus du vivant. Nous avons voulu être le plus