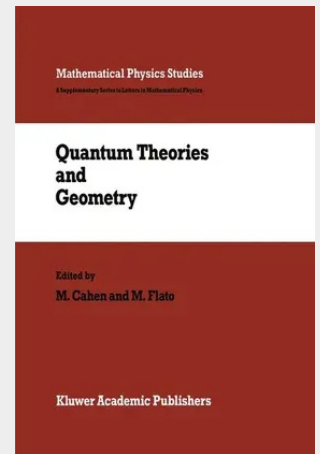


Quantum Theories and Geometry

This book presents the text of most of the lectures which were delivered at the Meeting Quantum Theories and Geometry which was held at the Fondation Les Treilles from March 23 to March 27, 1987. The general aim of this meeting was to bring together mathematicians and physicists who have worked in this growing field of contact between the two disciplines, namely this region where geometry and physics interact creatively in both directions. It is the strong belief of the organizers that these written contributions will be a useful document for research people working in geometry or physics. Three lectures were devoted to the deformation approach to quantum mechanics which involves a modification of both the associative and the Lie structure of the algebra of functions on classical phase space. A. Lichnerowicz shows how one can view classical and quantum statistical mechanics in terms of a deformation with a parameter inversely proportional to temperature. S. Gutt reviews the physical background of star products and indicates their applications in Lie groups representation theory and in harmonic analysis. D. Arnal gives a rigorous theory of the star exponential in the case of the Heisenberg group and shows how this can be extended to arbitrary nilpotent groups.

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