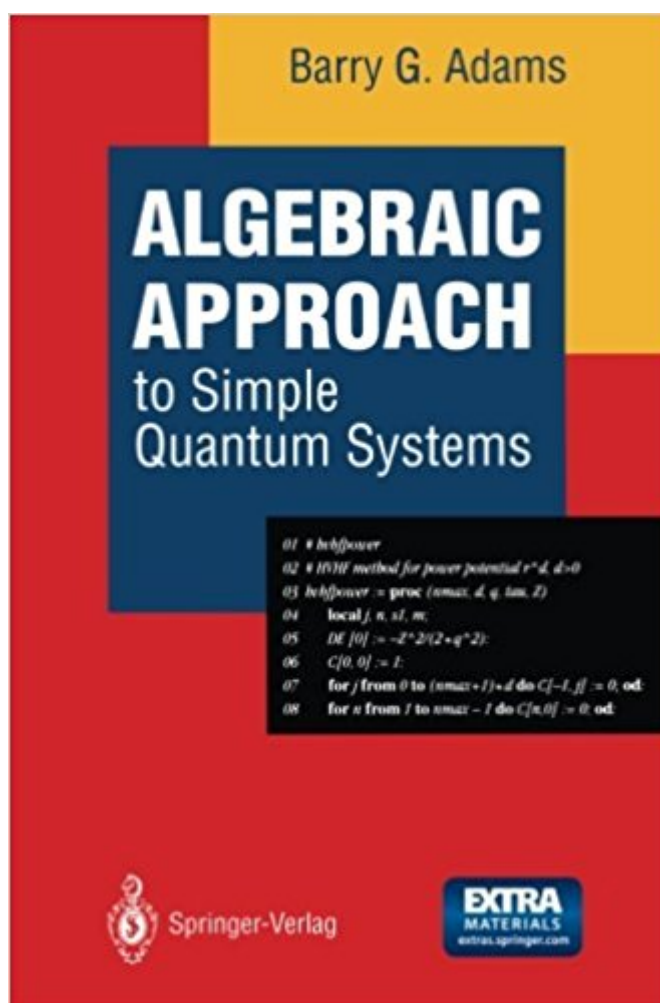The book was found

Algebraic Approach To Simple Quantum Systems: With Applications To Perturbation Theory

Synopsis

This book provides an introduction to the use of algebraic methods and symÃ Â bolic computation for simple quantum systems with applications to large order perturbation theory. It is the first book to integrate Lie algebras, algebraic perturbation theory and symbolic computation in a form suitable for students and researchers in theoretical and computational chemistry and is conveniently divided into two parts. The first part, Chapters 1 to 6, provides a pedagogical introduction to the important Lie algebras so(3), so(2,1), so(4) and so(4,2) needed for the study of simple quantum systems such as the D-dimensional hydrogen atom and harmonic oscillator. This material is suitable for advanced undergraduate and beginning graduate students. Of particular importance is the use of so(2,1) in Chapter 4 as a spectrum generating algebra for several important systems such as the non-relativistic hydrogen atom and the relativistic Klein-Gordon and Dirac equations. This approach provides an interesting and important alternative to the usual textbook approach using series solutions of differential equations.

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