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order with the goal of  
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but how crystal  
systems are related to  
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This book is intended as an introductory lecture in material physics, in which the modern computational group theory and the electronic structure calculation are in collaboration. The first part explains

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how to use computer algebra for applications in solid-state simulation, based on the GAP computer algebra package. Computer algebra enables us to easily obtain various group theoretical properties, such as the representations, character tables, and subgroups.

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Furthermore it offers a new perspective on material design, which could be executed in a mathematically rigorous and systematic way. The second part then analyzes the relation between the structural symmetry and the electronic structure in C60 (as

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an example of a system without periodicity). The principal object of the study was to illustrate the hierarchical change in the quantum-physical properties of the molecule, which correlates to the reduction in the symmetry (as it descends down in the

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(ladder of subgroups).  
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presents the  
computation of the  
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the C60 by means of  
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relevance of crystal structure analysis. It is concerned not only with the state of the field, but with its role in the perpetuation of life on earth. As such, it is a reference of vital interest to a broad range of analytical and practical sciences.

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symmetry of bulk  
crystals, including  
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crystal surfaces. The  
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subject at an introductory level, providing numerous graphic examples to illustrate the mathematical formalism. The book brings together and logically connects many seemingly disparate structural issues and notations used frequently by surface scientists and

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