Newcomers to the field of structural biology, which aims to understand life at the molecular level, see a vast number of existing results and are faced with a diverse range of experimental methods. These are used singly or in various combinations; however, the uncertainties of the results found are unfortunately not fully assessed.

Beginning with the basic physics of describing systematic and random errors, this book aims to explore these uncertainties by examining the accuracy of each experimental method used to determine a 3D biological macromolecule structure and its dynamics, and their various possible combinations. The book also discusses the uncertainties in our determination of atomic positions in our static structures, and our analysis of the living cell.

Aimed at graduate students from a wide range of science disciplines including physics, chemistry, biology, and mathematics, this book provides an overview of the topic of precision and accuracy in biological crystallography, diffraction, scattering, microscopies, and spectroscopies.

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