Record Nr. UNINA9910877213703321 Calculation of NMR and EPR parameters: theory and applications // **Titolo** [edited by] Martin Kaupp, Michael Buhl, Vladimir G. Malkin Pubbl/distr/stampa Weinheim,: Wiley-VCH, c2004 **ISBN** 1-280-52011-6 9786610520114 3-527-60496-0 3-527-60167-8 Descrizione fisica 1 online resource (623 p.) Altri autori (Persone) KauppMartin **BuhlMichael** MalkinVladimir G Disciplina 543/.66 Soggetti Nuclear magnetic resonance spectroscopy Electron paramagnetic resonance spectroscopy Quantum chemistry Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Description based upon print version of record. Note generali Nota di bibliografia Includes bibliographical references and index. Nota di contenuto Calculation of NMR and EPR Parameters; Contents; Foreword; List of Contributors: Part A Introductory Chapters: 1 Introduction: The Quantum Chemical Calculation of NMR and EPR Parameters; 2 Theory of NMR parameters. From Ramsey to Relativity, 1953 to 1983; 2.1 Introduction; 2.2 Spin-Spin Coupling; 2.3 Chemical Shifts; 2.4 General Aspects; 2.5 From 1983 to 2003; 3 Historical Aspects of EPR Parameter Calculations; 4 The Effective Spin Hamiltonian Concept from a Quantum Chemical Perspective: 5 Fundamentals of Nonrelativistic and Relativistic Theory of NMR and EPR Parameters; 5.1 Introduction 5.2 Classical Theory of the Interaction of a Charged Particle with an Electromagnetic Field5.3 Quantum Mechanical Hamiltonians in a Time-Independent Electromagnetic Field; 5.4 Perturbation Theory of Magnetic Effects; 5.5 Non-Relativistic Theory of EPR and NMR Parameters; 5.6 Relativistic Theory of Magnetic Properties; 5.7 The Leading Relativistic

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Sommario/riassunto

This is the first book to present the necessary quantum chemical methods for both resonance types in one handy volume, emphasizing the crucial interrelation between NMR and EPR parameters from a computational and theoretical point of view. Here, readers are given a broad overview of all the pertinent topics, such as basic theory, methodic considerations, benchmark results and applications for both spectroscopy methods in such fields as biochemistry, bioinorganic chemistry as well as with different substance classes, including fullerenes, zeolites and transition metal compounds. The chapters