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| Nota di contenuto       | Models for Bonding in Chemistry; Contents; Preface; 1 Mathematical Foundations; 1.1 MATRICES AND SYSTEMS OF LINEAR EQUATIONS; 1.2 PROPERTIES OF EIGENVALUES AND EIGENVECTORS; 1.3 VARIATIONAL APPROXIMATIONS; 1.4 ATOMIC UNITS; 1.5 THE ELECTRON DISTRIBUTION IN MOLECULES; 1.6 EXCHANGE-OVERLAP DENSITIES AND THE CHEMICAL BOND; Part 1: Short-range Interactions; 2 The Chemical Bond; 2.1 AN ELEMENTARY MOLECULAR ORBITAL MODEL; 2.2 BOND ENERGIES AND PAULI REPULSIONS IN HOMONUCLEAR DIATOMICS; 2.2.1 The Hydrogen Molecular Ion H <sub>2</sub> <sup>+</sup> (N = 1); 2.2.2 The Hydrogen Molecule H <sub>2</sub> (N = 2)<br>2.2.3 The Helium Molecular Ion He <sub>2</sub> <sup>+</sup> (N = 3)2.2.4 The Helium Molecule He <sub>2</sub> (N = 4); 2.3 MULTIPLE BONDS; 2.3.1 s <sub>2</sub> p <sub>2</sub> Description of the Double Bond; 2.3.2 B <sub>2</sub> 1 B <sub>2</sub> 2 Bent (or Banana) Description of the Double Bond; 2.3.3 Hybridization Effects; 2.3.4 Triple Bonds; 2.4 THE THREE-CENTRE DOUBLE BOND IN DIBORANE; 2.5 THE HETEROPOLAR BOND; 2.6 STEREOCHEMISTRY OF POLYATOMIC MOLECULES; 2.6.1 The Molecular Orbital Model of Directed Valency; 2.6.2 Analysis of the MO Bond Energy; 2.7 sp-HYBRIDIZATION EFFECTS IN FIRST-ROW HYDRIDES; 2.7.1 The Methane Molecule; 2.7.2 The Hydrogen Fluoride Molecule |

2.7.3 The Water Molecule; 2.7.4 The Ammonia Molecule; 2.8  
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Sommario/riassunto

A readable little book assisting the student in understanding, in a nonmathematical way, the essentials of the different bonds occurring in chemistry. Starting with a short, self-contained, introduction, Chapter 1 presents the essential elements of the variation approach to either total or second-order molecular energies, the system of atomic units (au) necessary to simplify all mathematical expressions, and an introductory description of the electron distribution in molecules. Using mostly  $2 \times 2$  Huckel secular equations, Chapter 2, by far the largest part of the book because of the many implicat