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Nota di contenuto	EXPLORING QUANTUM PHYSICS THROUGH HANDS-ON PROJECTS; Introduction; Prologue; Important Disclaimer and Warnings; Acknowledgments; About the Authors; 1 LIGHT AS AWAVE; Newton's View: Light Consists of Particles; Young's Interference of Light; Automatic Scanning of Interference Patterns; The Final Nail in the Coffin for Newton's Theory of Light; Light as an Electromagnetic Wave; Polarization; Optics with 3-cm Wavelength "Light"; Real-World Behaviors; Double-Slit Interference with Microwaves; The Doppler Effect; Experiments and Questions; 2 LIGHT AS PARTICLES The Seed of Quantum Physics: Planck's FormulaThe Photoelectric Effect; Can we Detect Individual Photons?; Low-Cost PMT Power Supplies; Listening to Individual Photons; Where does this Leave Us?; Experiments and Questions; 3 ATOMS AND RADIOACTIVITY; The Need for Vacuum; The Mechanical Vacuum Pump; The Vacuum Gauge; A Very-High- Voltage Power Supply; A Vacuum Tube Lego® Set; Phosphor Screens; The Electron Gun; The Discovery of the Electron; Cathode-Ray Tubes; Thomson's First 1897 Experiment-Negative Charge and Rays are Joined Together

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Sommario/riassunto

Build an intuitive understanding of the principles behind quantum mechanics through practical construction and replication of original experiments With easy-to-acquire, low-cost materials and basic knowledge of algebra and trigonometry, Exploring Quantum Physics through Hands-on Projects takes readers step by step through the process of re-creating scientific experiments that played an essential role in the creation and development of quantum mechanics. Presented in near chronological order-from discoveries of the early twentieth century to new material on entanglement-th
