Record Nr. UNINA9910141348103321 Autore Prutchi David **Titolo** Exploring quantum physics through hands-on projects [[electronic resource] /] / David Prutchi and Shanni R. Prutchi Hoboken, N.J., : Wiley, c2011 Pubbl/distr/stampa **ISBN** 1-280-58880-2 1-118-17070-9 1-118-17068-7 1-118-17071-7 Edizione [1st edition] Descrizione fisica 1 online resource (xxv, 261 p.) Classificazione SCI057000 Altri autori (Persone) PrutchiShanni R Disciplina 535.15 Soggetti Quantum theory Quantum theory - Experiments Science projects Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Description based upon print version of record. Nota di bibliografia Includes bibliographical references and index. 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;

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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