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Autore	Horvath Tibor <1928->
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Nota di contenuto	Understanding Lightning and Lightning Protection; Contents; PREFACE; INTRODUCTION; Guide to use the program; 1. CLOUD, CYCLONE AND FRONTS; Development of a cloud; Growth of a thunderstorm cloud; Development of a cyclone; Warm and cold fronts; Distribution of thunderstorms; 2. ELECTRIC CHARGES IN CLOUDS; Processes of charge separation; Charging process in the liquid phase; Charging process during freezing; Final distribution of charges; Static electric field; Relation to the ionosphere; 3. DISCHARGE PROCESSES IN AIR; Photon processes; Excitation by photon; Ionisation and absorption RecombinationElectron collisions; Excitation by electron; Ionisation by collision; Discharges; Electron avalanche; Streamer discharge; Klydonograph; Leader discharge; 4. DEVELOPMENT OF THE LIGHTNING FLASH; Start on drops in the cloud; From leader to main stroke; Multiple stroke; Upward leader; The Boys-camera: Principle and construction; The Boys-camera: Operation; Boys-record of ideal lightning; Real Boys-records; 5. PHYSICS OF THE LIGHTNING DISCHARGE; Properties of a downward leader; Condition of connecting leader; Striking process; Development of main stroke; Multiple and

upward stroke

The current waveLightning parameters; Distribution functions; 6. CURIOUS LIGHTNING PHENOMENA; Properties of ball lightning; Ball lightning-theories; Resonance theory; Quantum-theory; Theory of magnetic vortex; Photos of ball lightning; Beaded lightning; Stroke from clear sky; Discharge to the ionosphere; 7. INDUCED VOLTAGE; Ampere's law; Rectangular loop + infinite conductor; Rectangular loop + cut conductor; Reduction to basic components; Triangular loop; Polygonal loop; Induced voltage due to direct stroke; Induced current due to direct stroke; Induced voltage due to distant stroke Induced current due to distant stroke8. DYNAMIC FORCES DUE TO LIGHTNING; Parallel wires; Force due to lightning on a rod struck at the top; Force due to lightning on a horizontal wire; Force due to lightning on a metal plate; Force of leaded current at inversion of wire; Force of leaded current on a tube; Dynamic force on a console; Slit effect; Damage on tree; 9. HEAT EFFECTS ON METAL OBJECTS; Heating a metal plate; Change of temperature in a metal plate; Equations of melting a metal plate; Crater and droplets; Melting a wire at contact spot; Melting a wire leading current Probability of melting10. LIGHTNING ATTACHMENT; Point of orientation; The striking distance; Distribution and density functions; The expected frequency of stroke; The principle of calculation; Collection space; 11. COLLECTION SPACES OF STRUCTURES; The principle of collection space; Dividing the collection space; Two conductors; Lightning rod on tower; Air terminations of block-house; The collection space of one mesh; 12. PROTECTIVE EFFECT ON FLAT ROOF; Air termination systems on blockhouse; Diagrams related to several air terminations; Application of rolling sphere method 13. PROTECTION OF INCLINED ROOF

Sommario/riassunto

The advent of complex intelligent structures and low-voltage electronic installations within buildings requires increasingly sophisticated lightning protections techniques. As a multimedia book, Understanding Lightning and Lightning Protection is a unique, interactive self-teaching tool that provides an in-depth understanding of lightning protection. Understanding Lightning and Lightning Protection helps the reader to understand the propagation of waves within complex intelligent structures within buildings, and the operation of systems designed to protect these structures. It
