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Autore	Demoulin Bernard
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Features of Electromagnetic Cavities; 2.1. Introduction; 2.2. Reduction of the modes in a 1D cavity; 2.2.1. Description of the 1D cavity; 2.2.2. Solutions of the 1D waves equation; 2.2.3. Eigenmodes computation
2.2.4. Comparison of a cavity to a network of LC resonators2.2.5. Contribution of the quality factor to the cavity; 2.2.6. Optimal coupling of the energy on an eigenmode; 2.2.7. Deviation of the modal frequencies produced by an obstacle; 2.2.8. Implementation of mode stirring; 2.3. Physical features of an empty rectangular cavity; 2.3.1. Geometrical description of the reverberation chamber; 2.3.2. Calculation of the eigenmodes' frequencies; 2.3.3. The first eigenmode; 2.3.4. Higher order modes; 2.3.5. Mode spacing and mode density; 2.3.6. Quality factor of the 3D cavity
2.3.7. Regarding the excitation conditions of the cavity2.3.8. Plane wave spectrum; 2.3.9. Influence of the energy losses on the plane wave spectrum; 2.4. The 3D cavity operating in stirred modes; 2.4.1. Role given to mode stirring; 2.4.2. Mechanical mode stirring; 2.4.3. Experimental proof of the modal excursion; 2.5. Discussion; 2.5.1. On the geometry of reverberation chambers; 2.5.2. On the use of the RLC resonators; 2.5.3. On the contribution of the modal interferences; 2.6. Bibliography; Chapter 3. Statistical Behavior of Stirred Waves in an Oversized Cavity; 3.1. Introduction
3.2. Descriptions of the ideal random electromagnetic field3.2.1. The electromagnetic field assumed as a random variable; 3.2.2. Statement of the postulate of an ideal random field; 3.2.3. Presentation conventions of the random variables; 3.2.4. 2 probability distribution; 3.2.5. Probability density function of the absolute field amplitude; 3.2.6. Probability density function of the power variable; 3.3. Simulation of the properties of an ideal random field; 3.3.1. Construction of the plane wave spectrum; 3.3.2. Construction of the interferences by random trials
3.3.3. Use of the central limit theorem

Sommario/riassunto

Dedicated to a complete presentation on all aspects of reverberation chambers, this book provides the physical principles behind these test systems in a very progressive manner. The detailed panorama of parameters governing the operation of electromagnetic reverberation chambers details various applications such as radiated immunity, emissivity, and shielding efficiency experiments.In addition, the reader is provided with the elements of electromagnetic theory and statistics required to take full advantage of the basic operational rules of reverberation chambers, including calibration proc