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Nota di contenuto	Preface -- Introduction -- Random Vibration of System with Finitely Many Degrees of Freedom and Several Coalescent Natural Frequencies -- Random Vibration of a Vehicle Model -- Hybrid Optimization and Anti-Optimization -- of a Stochastically Excited Beam -- Random Vibration of a Point-Driven Two-Span Beam -- on an Elastic Foundation -- Random Vibrations of Orthotropic Plates -- Wide-Band Random Axisymmetric Vibration of Cylindrical Shells -- Turbulent Flow-Excited Vibrations of a Shallow Cylindrical Shell -- On the Role of Cross-Correlations in the Random Vibrations -- of Spherical Shells -- Dramatic Effect of Cross Correlations in Random Vibration of Point-

Driven Flat Plate and Spherically Curved Panel -- Appendix A. The Effect of the Eigenvectors Associated With the Repeated Frequencies.

Sommario/riassunto

This volume explains the dramatic effect of cross-correlations in forming the structural response of aircraft in turbulent excitation, ships in rough seas, cars on irregular roads, and other dynamic regimes. It brings into sharp focus the dramatic effect of cross correlations often neglected due to the analytical difficulty of their evaluation. Veteran author Professor Isaac Elishakoff illustrates how neglect of cross correlations could result in underestimation of the response by tens or hundreds of percentages the effect of the random vibrations of structures' main elements, including beams, plates, and shells. Clarifies the common misconception that natural frequencies of structures are well apart from each other; Illustrates that the interaction of associated modes in plates can dramatically alter the random response due to presence of coinciding frequencies; Demonstrates that natural frequencies in beams on elastic foundation, as well as cylindrical or spherical shells, might cluster together resulting in substantial percentage error if cross-correlations are ignored .