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1.10. Significance of the statistical analysis (ensemble or temporal)
1.11. Stationary and pseudo-stationary signals; 1.13. Sliding mean;
1.14. Test of stationarity; 1.14.1. The reverse arrangements test (RAT);
1.14.2. The runs test; 1.15 Identification of shocks and/or signal problems; 1.16. Breakdown of vibratory signal into "events": choice of signal samples; 1.17. Interpretation and taking into account of environment variation; Chapter 2. Random Vibration Properties in the Frequency Domain; 2.1. Fourier transform; 2.2. Power spectral density; 2.2.1. Need; 2.2.2. Definition
2.3. Amplitude Spectral Density2.4. Cross-power spectral density; 2.5. Power spectral density of a random process; 2.6. Cross-power spectral density of two processes; 2.7. Relationship between the PSD and correlation function of a process; 2.8. Quadspectrum - cospectrum; 2.9. Definitions; 2.9.1. Broadband process; 2.9.2. White noise; 2.9.3. Band-limited white noise; 2.9.4. Narrow band process; 2.9.5. Colors of noise; 2.10. Autocorrelation function of white noise; 2.11. Autocorrelation function of band-limited white noise; 2.12. Peak factor
2.13. Effects of truncation of peaks of acceleration signal on the PSD2. 14. Standardized PSD/density of probability analogy; 2.15. Spectral density as a function of time; 2.16. Sum of two random processes; 2.17. Relationship between the PSD of the excitation and the response of a linear system; 2.18. Relationship between the PSD of the excitation and the cross-power spectral density of the response of a linear system; 2.19. Coherence function; 2.20. Transfer function calculation from random vibration measurements; 2.20.1. Theoretical relations; 2.20.2. Presence of noise on the input
2.20.3. Presence of noise on the response

Sommario/riassunto

The vast majority of vibrations encountered in the real environment are random in nature. Such vibrations are intrinsically complicated and this volume describes the process that enables us to simplify the required analysis, along with the analysis of the signal in the frequency domain. The power spectrum density is also defined, together with the requisite precautions to be taken in its calculations as well as the processes (windowing, overlapping) necessary to obtain improved results.An additional complementary method - the analysis of statistical properties of the time signal - i