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**Title:** Engineering applications of correlation and spectral analysis

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**Publication:** New York, Wiley-Interscience, 1980. 315 p.

**Publication Date:** 00/1980

**Category:** Engineering (General)

**Origin:** [STI](#)

**NASA/STI Keywords:** Electrical Engineering, Signal Analysis, Spectral Correlation, Spectrum Analysis, Statistical Correlation, Stochastic Processes, Applications Of Mathematics, Communication Theory, Complex Variables, Fourier Series, Frequency Response, Parameter Identification, Probability Theory, Random Errors, Signal Measurement,

**Bibliographic Code:** [1980wi...book....B](#)

### Abstract

The book examines applications of correlation and spectral analysis bridging the gap between the engineering measurements and theoretical results from analytical models. Basic principles of correlation and spectral density analysis based on calculus, Fourier series, and the complex variable theory; procedures for analyzing single input/output relationships; time delay and phase lag estimates; and identification of multiple propagation paths and velocities for dispersive and nondispersive media are presented. Finally, the analysis of multiple input/output applications of multiple and partial coherence functions is given along with the practical statistical error analysis formulas for computing spectral density functions, coherence functions, and frequency response functions.

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