

CHAPTER 49
TECHNOLOGY
APPLIED MATHEMATICS

Doctoral Theses

448. AZAD (Sarita)
Wavelet Based Search for Periodicities in Indian Monsoon Rainfall Time Series.
Supervisor : Dr. R. Srivastava
Th 15752

Abstract

This searches for significant periodicities in the rainfall received by appropriately defined homogeneous regions of India. The main data analysed is the annual time series of homogeneous Indian monsoon rainfall and its 14 constituents sub-divisions over the period 1871-1990. Other regions are also studies, to provide a broad view of spectral characteristics of Indian rainfall by developing a method based on multivariate analysis that provides a rational procedure for taking these factors into account.

Contents

1. Introduction. 2. The data analysed. 3. Analysis of test signals. 4. Identify closely spaced periodicities. 5. Statistical significance tests. 6. Spectral homogeneity. 7. Spectrally homogeneous monsoon regions. 8. Conclusions, explanations and vistas ahead. 9. Bibliography.

449. SIVAPRASAD KUMAR (S.)
On Applications of Differential Subordination Technique to Univalent Functions..
Supervisor : Prof. H. C. Taneja
Th 15597

Abstract

Investigates sufficient conditions for starlikeness of normalized

analytic functions defined on the open unit disk in the complex plane by applying the theory of first order differential subordination and superordination. The results obtained have been further used to obtain sufficient conditions for functions defined through linear operators, which include as special cases the Ruscheweyh derivatives, Salagean derivatives, fractional derivatives and Carleson-Shaffer linear operators. Also certain sufficient conditions have been obtained for certain meromorphic functions defined on the punctured unit disk in the complex plane.

Contents

1. Introduction. 2. First order differentials subordinations and superordinations. 3. Differential sandwich theorems for linear operators. 4. Some classes of multivalent functions. 5. Some classes of meromorphic functions. 6. Applications of differential subordination & superordination to analytic functions. 7. Conclusion. 8. Bibliography.