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A BIBLIOGRAPHY ON
NON-GAUSSIAN SIGNAL PROCESSING: 1971-1980*

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by

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A BIBLIOGRAPHY ON NON-GAUSSIAN SIGNAL PROCESSING: 1971-1980

I. INTRODUCTION

As described in a recent report, "Study of a Class of Non-Gaussian Signal Processing Problems" by C. H. Chen, non-Gaussian signal processing is an area of both theoretical and practical importance. Some appropriate research programs in non-Gaussian signal processing, as suggested in ONR SRO booklet, may be:

1. To analyze existing algorithms for "worst case" situations in the presence of intentional man-made noise. Nonparametric and robust approaches should be explored to devise algorithms which perform well no matter what characteristics the noise source may have.

2. To investigate techniques for weak signal extraction in the presence of strong signals; as a special case, to explore potential techniques for detecting spread-spectrum signals including the analysis of changes in noise statistics caused by pseudo-noise signals.

3. To enlarge the basic mathematical and statistical theory of non-Gaussian stochastic processes applicable to both electromagnetic and underwater sound environments.

4. To study non-Gaussian models appropriate for reverberation or reverberation-like noise found in shallow water environments.

5. To examine the extent of non-Gaussian sources of impulsive noise interference in underwater acoustic signal processing problems of Navy interest.

6. To overcome related shortcomings in existing theory including non-white interference, non-stationarity of channels and inter-ferences, multipath, dispersion, doppler effects, and problems caused by sensor and array flaws.

This Bibliography is prepared according to the above outline of problem areas. Only the last ten years' publications are selected. It is not possible to list all relevant publications even for the ten year period. However, at least some representative literatures are included in each topic. All publications listed are unclassified. Each reference is listed only once in the report. References are arranged in the first author's alphabetical order.

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report contains approximately 125 references on non-Gaussian signal processing, which are divided among the topics: nonparametric/robust approaches, adaptive detection, channel modelling/array processing, maximum entropy spectral analysis, and electronic warfare.

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