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O'Brien, Jr. et al.

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[54] SYSTEM FOR ASSESSING STOCHASTIC PROPERTIES OF SIGNALS REPRESENTING THREE ITEMS OF MUTUALLY ORTHOGONAL MEASUREMENT INFORMATION

Primary Examiner—Temesghen Ghebretinsae  
Attorney, Agent, or Firm—Michael J. McGowan; Michael F. Oglo; Prithvi C. Lall

### [57] ABSTRACT

A signal processing system provides and processes a digital signal, generated in response to an analog signal, which includes a noise component and possibly also an information component representing three mutually orthogonal items of measurement information representable as a sample point in a symbolic Cartesian three-dimensional spatial reference system. A noise likelihood determination sub-system receives the digital signal and generates a random noise assessment of whether or not the digital signal comprises solely random noise, and if not, generates an assessment of degree-of-randomness. The noise likelihood determination system controls the operation of an information processing sub-system for extracting the information component in response to the random noise assessment or a combination of the random noise assessment and the degree-of-randomness assessment. The information processing system is illustrated as combat control equipment for submarine warfare, which utilizes a sonar signal produced by a towed linear transducer array, and whose mode operation employs three orthogonally related dimensions of data, namely: (i) clock time associated with the interval of time over which the sample point measurements are taken, (ii) conical angle representing bearing of a passive sonar contact derived from the signal produced by the towed array, and (iii) a frequency characteristic of the sonar signal.

[75] Inventors: Francis J. O'Brien, Jr., Newport; Chung T. Nguyen, Bristol; Sherry E. Hammel, Little Compton, all of R.I.

[73] Assignee: The United States of America as represented by the Secretary of the Navy, Washington, D.C.

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[58] Field of Search ..... 375/346, 351, 375/326, 316, 224, 227; 455/218, 222, 223, 296, 63, 67.3; 367/21

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