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Vakoc

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(54) **FOLDED SAGNAC SENSOR ARRAY**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

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(57) **ABSTRACT**

A folded Sagnac fiber optic acoustic sensor array operates in a manner similar to a Sagnac interferometer but uses a common delay path to reduce distributed pickup in down-lead fibers. The fiber optic acoustic sensor array is used to detect acoustic waves in water. By basing the folded Sagnac sensor array on operating principles similar to the Sagnac interferometer rather than basing the array on a Mach-Zehnder interferometer, the sensor array has a stable bias point, has reduced phase noise, and allows a broadband signal source to be used rather than requiring a more expensive narrowline laser. A large number of acoustic sensors can be multiplexed into the architecture of the folded Sagnac fiber optic acoustic array.

3 Claims, 38 Drawing Sheets

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(65) **Prior Publication Data**

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Related U.S. Application Data

(63) Continuation of application No. 09/520,277, filed on Mar. 6, 2000, now Pat. No. 6,278,657, which is a continuation-in-part of application No. 09/253,203, filed on Feb. 19, 1999, now Pat. No. 6,034,924.

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(51) **Int. Cl.**⁷ **H04R 1/00**

(52) **U.S. Cl.** **367/149**

(58) **Field of Search** 367/149, 140;
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356/345, 350

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