Self-referenced optical fiber sensor and related sensor network

ABSTRACT

The general field of the invention is that of fiber-optic sensors comprising at least one measurement optical fiber (10) having an optically pumped doped amplifying medium (11), the optical characteristics of which are sensitive to a physical quantity, the fiber having at least one Bragg grating (12). The fiber is designed so as to generate, in the amplifying medium, two optical waves (1, 2) having different optical frequencies that propagate in the same direction after reflection on the Bragg grating and are emitted by the amplifying medium, the two optical frequencies depending on the physical quantity. The two waves may be generated using either a birefringent polarization-maintaining fiber or a DBR (Distributed Bragg Reflector) laser cavity. Notably, this sensor may be used as a hydrophone.

FIGURE 1

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