

Self-referenced optical fiber sensor with stimulated Brillouin scattering

ABSTRACT

The general field of the invention is that of optical fiber sensors. The sensor according to the invention is used to measure a physical quantity and it comprises at least:

- a measurement optical fiber (10) comprising at least one Bragg grating (12);
- optical means (20) designed to inject, into the fiber, a first, "pump" wave at a first optical frequency and a second, "probe" wave at a second optical frequency, the second optical frequency being different from the first optical frequency, the Bragg grating being designed to reflect the first and second optical waves, and the optical power of the first wave being sufficient to give, after interaction with the second wave reflected by stimulated Brillouin scattering, a "Stokes" wave, the frequency of which is representative of the physical quantity to be measured; and
- means (40) for analyzing the difference in frequency between the two, "pump" and "Stokes", optical waves.

This sensor may notably be used as a hydrophone.

FIGURE 3



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