Abstract Submitted
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An all-optical atomic magnetometer-gradiometer for use in Earth's field.[1] ROBERT WYLLIE, ABIGAIL PERRY, Georgia Tech Research Institute, Atlanta, Georgia, 30318, USA, THAD WALKER, University of Wisconsin, Madison, Wisconsin 53706, USA, BOB BUCKLEY, GORDON MORRISON, Freedom Photonics, Santa Barbara, CA 93117, MICHAEL BULATOWICZ, ROBERT GRIFFITH, PHILIP CLARK, DENNIS BEVAN, BO HALAMANDARIS, JAMES PAVELL, MICHAEL LARSEN, Northrop Grumman Corporation, Woodland Hills, California 91367, USA — We present the design and initial characterization of an all-optical atomic magnetometer and gradiometer. The magnetometer and gradiometer channels utilize pulsed optical pumping synchronous with the Larmor precession of 87Rb atoms, while a co-propagating probe beam reads out both the magnetometer and gradiometer signals. The magnetometer sensitivity is near 200 fT/Hzˆ1/2, while the gradiometer sensitivity is below 100 fT/cm/Hzˆ1/2 on a 4 cm baseline. We will also present the characterization of the common mode rejection ratio and our approach to mitigating deadzones in the measurement.

[1]DARPA

Robert Wyllie
Georgia Tech Research Institute, Atlanta, Georgia, 30318, USA

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