Abstract Submitted
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Adventures in Alignment-Based Magnetometry B. PATTON, Department of Physics, UC Berkeley, O.O. VERSOLATO, Kernfysisch Versneller Instituut, University of Groningen, The Netherlands, E. CORSINI, Department of Physics, UC Berkeley, D.C. HOVDE, Southwest Sciences, Inc., S. ROCHESTER, Department of Physics, UC Berkeley, D. BUDKER, Department of Physics, UC Berkeley and Nuclear Science Division, Lawrence Berkeley National Laboratory — Alkali-vapor magnetometers constitute the world's most precise magnetic sensors to date. Typically such devices employ circularly polarized light and thus rely upon orientation, the lowest-order polarization moment which can be excited in an alkali atom. The use of atomic alignment, imparted by linearly polarized light, can offer advantages over orientation-based magnetometry due to the higher-order symmetry of the aligned state. Here we discuss developments in alignment-based magnetometry, with particular focus on the issues of systematic errors such as heading error. Such errors will also be addressed in the context of a self-oscillating magnetometer, along with the prospect of completely remote magnetometry performed over a large free-space distance.

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