Abstract Submitted
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Optical gyroscope with controllable dispersion in four wave mixing regime.[1] EUGENIY MIKHAILOV, OWEN WOLFE, SHUANGLI DU, College of William and Mary, SIMON ROCHESTER, DMITRY BUDKER, Rochester Scientific, LLC, IRINA NOVIKOVA, College of William and Mary — We present our work towards realization of the fast-light gyroscope prototype, in which the sensitivity enhancement (compared to a regular laser gyroscopes) is achieved by adjusting the intra-cavity dispersion. We discuss schematics and underlying nonlinear effects leading to the negative dispersion in Rb vapor: level structure, optically addressed transitions, and configuration of the resonant cavity. We investigate dependence of the pulling factor (i.e., the ratio of the lasing frequency shift with the change of the cavity length to the equivalent resonance frequency shift in the empty cavity) on pump lasers detunings, power, and density of the atomic vapor. The observation of the pulling factor exceeding unity implies the gyroscope sensitivity improvement over the regular system

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