

Abstract Submitted
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A large frame gyrolaser¹ MARIA ALLEGRINI, JACOPO BELFI, NICOLÒ BEVERINI, INFN and CNISM, Physics Department, University of Pisa, FILIPPO BOSI, INFN, Sezione di Pisa, GIORGIO CARELLI, INFN and CNISM, Physics Department, University of Pisa, ANGELA DI VIRGILIO², INFN, Sezione di Pisa, ENRICO MACCIONI, INFN and CNISM, Physics Department, University of Pisa, FIODOR SORRENTINO, Physics Department, University of Florence — A large frame ring laser gyroscope optimized for very high rotational sensitivity has been designed and built. It can be used for fine control of the interferometer mirrors alignment for the Earth based third generation gravitational antenna. Another foreseen application is geophysical monitoring of the Earth rotational motion. Presently, the ring laser optical cavity is a square with 1.60 m of side with 4 mirrors of reflectivity near 99.999%. The mechanical drawing allows easy scaling of the square area from the present 2m² value down to 0.81 m². Without optimization of the isolation system from the vibration noise of the environment, preliminary recording of the power spectral noise indicates a rotational resolution near to 10⁸ rad/(sHz^{1/2}) at 1 Hz. Exploitation for a three dimensional sensor, composed by three independent gyroscopes, is in progress.

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