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Research progress on large-scale passive laser gyroscopes operated at 532 nm

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Large-scale laser gyroscopes are precise devices for angular velocity measurement based on Sagnac effect, and their performance is positively related to the scale factor. To obtain a higher rotational resolution, we develop a large-scale-factor green laser gyro with a size of 8-meter by 8-meter in Wuhan, China, operated at a wavelength of 532 nm. The expected Sagnac frequency is 556.7 Hz. The cavity Q-factor is inferred to be 2.8×10^{12} via an estimated mirror loss of 34 ppm each. At the same time, its twin, the 10-meter by 10-meter green-light-gyro, is also being prepared at Sun Yat-sen University in Zhuhai, China. This talk will focus on the scheme design and noise evaluation of these two setups.

Primary author: CHEN, Yuxuan (Huazhong University of Science and Technology)

Co-authors: LIU, Kui (Sun Yat-sen University); Ms FENG, Xiaohua (Huazhong University of Science and Technology); ZHANG, Haobo (Huazhong University of Science and Technology); ZHONG, Yuhong (Huazhong University of Science and Technology); Ms YAO, Jinpei (Huazhong University of Science and Technology); Ms LIU, Yawen (Huazhong University of Science and Technology); Prof. LU, Zehuang (Huazhong University of Science and Technology); Prof. ZHANG, Jie (Huazhong University of Science and Technology)

Presenter: CHEN, Yuxuan (Huazhong University of Science and Technology)

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