



Integration and initial operation of the multi-component large ring laser structure ROMY

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Rotation sensing for the geosciences requires a high sensor resolution of the order of 10 pico- radians per second or even less. An optical Sagnac interferometer offers this sensitivity, provided that the scale factor can be made very large. We have designed and built a multi- component ring laser system, consisting of 4 individual large ring lasers, each covering an area of more than 62 square m. The rings are orientated in the shape of a tetrahedron, so that all 3 spatial directions are covered, allowing also for some redundancy. We report on the initial operation of the free running gyroscopes in their underground facility in order to establish a performance estimate for the ROMY ring laser structure. Preliminary results suggest that the quantum noise limit is lower than that of the G ring laser.