Title: *Sensor orientation and perimeter stabilisation of the ROMY installation*

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Abstract: The ring laser technology detects very small rotational signals relative to inertial space and works over a wide frequency range. A sensor resolution of less than 0.1 prad/s over several weeks has been already obtained by the single component G ring laser, located at the Geodetic Observatory Wettzell. The 4 component ROMY ring laser structure, arranged in the shape of a tetrahedron is based on the same principle of operation, in that it also constitutes a HeNe cw bidirectional ring laser interferometer. However, it differs from the G ring laser by the fact that it comprises 4 individual very large triangular stainless steel gyros, which are rigidly tied together on a massive underground concrete monument. At this point in time each of the 4 laser cavities is still free running. So all the lasers exhibit a significant sensor drift. A closed loop feedback system, tightly controlling the perimeter of these 36 m long cavities, offers a way to stabilize the operations. Over the last few months we have introduced such a stabilization system to the first of the 4 rings as a proof of concept. In this talk we introduce the stabilization process, outline the achieved results and provide a solution for the orientation (misalignment) of the complete hybrid ROMY sensor with respect to a global Earth fixed reference system.