

**LABORATORI NAZIONALI DEL GRAN SASSO**

## **SEMINAR ANNOUNCEMENT**

On **December 10, 2009**, at **2:30 pm**, **K.U. Schreiber** from **Bundesamt für Kartographie und Geodäsie, Geodätisches Observatorium Wettzell (Germany)** will give a seminar entitled:

# **“Continuous Earth Rotation Monitoring with the large Ring Laser G”**

### **Abstract**

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Over the last decade, ring lasers have found their way back into the research laboratories. By scaling them up in size, they have gained several orders of magnitude over their commercial counterparts, both in sensitivity and stability. Unlike the established space geodetic techniques SLR/LLR and VLBI, ring lasers can be operated autonomously and continuously.

Furthermore, laser gyros reach a resolution of 1 pico-rad/s already after an integration time of less than 2 hours. This opens the door for the research of high frequency variations in Earth rotation. Over the last year we have improved the technology by as much as a factor of 3, which makes the domain of  $\Delta\Omega/\Omega \approx 10^{-9}$  of Earth rotation accessible to a local rotation sensor.

Recent efforts concentrate on the extension of the sensor stability against a drift induced by atmospheric pressure variations and the corresponding temperature changes from adiabatic expansion and compression of the local air as well as a new approach in local sensor orientation effects. This talk will introduce the latest results on high precision Sagnac interferometry and outline necessary future steps for further improvement of the technology.

**(“B. Pontecorvo” room)**