



Local and Global Rotations in Data of the Large Laser Gyroscope „G“

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Large ring lasers being rigidly attached to the Earth allow the direct measurement of the instantaneous Earth rotation vector. However local rotations of any origin are recorded as well. In order to separate the local from the global components, different approaches were adopted. While strong periodic signals at tidal frequencies are clearly related to global phenomena like diurnal polar motion or Earth and ocean tides, aperiodic and transient signals can only be related to physical processes by modelling and comparison with other time series e.g. from environmental or auxiliary sensors.

Recently beside instrumental effects resulting from state fluctuations of the ring laser itself, crustal deformations driven by local winds are identified as one source of local rotations. However the time series still show evidence of other non-global rotation sources.