1046-45-426   **Volker Michel***, University of Siegen, Emmy-Noether-Campus, Walter-Flex-Strazße 3, 57068 Siegen, Germany. *On some mathematical aspects of the ill-posed determination of the Earth's interior.*

The determination of the Earth's interior is a typical example of an ill-posed inverse problem. The available data are of various types: e.g. (terrestrial, airborne, and spaceborne) gravitational data, earthquake travel times, and normal mode anomalies. The available rheological quantities are the mass density and the speeds of P and S waves. From the mathematical point of view, different examples of Fredholm integral equations of first kind are involved. In this talk, selected theoretical and numerical aspects of the involved problems (in particular, the inversion of gravitational data and travel times) are discussed. Briefly, normal mode tomography is mentioned. Moreover, some open problems are pre-sented. (Received September 02, 2008)