Geodynamics Seminar

第296回ジオダイナミクスセミナー

The RPR and its extension to ACROSS for active monitoring of the Earth's interiors

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主催：愛媛大学地球深部ダイナミクス研究センター
日時：6/3（金）午後 4時30分～
場所：理学部講義棟2F201

Abstract

A history of spectroscopy in the solid Earth geophysics is reviewed form RPR to ACROSS via SOMPI, with a special emphasis on the expected utility of ACROSS network for the prediction research of coming disastrous earthquake (Tokai + Tonankaido + Nankaido) of possibly M=~9 after the recent Tohokunihon event. The RPR is an acronym of 'Rectangular Parallelepiped Resonance' developed by professor Ichiro Ohno in 1971(Master Thesis). This is a new potential method to determine the accurate elastic constants of anisotropic minerals constituting the Earth's interiors. This approach has been applied to all the specimens of mantle minerals available up to high temperatures. Later this is applied to high-temperature super-conducting materials, for which only very small sample is provided, The SOMPI is a translation of 存否, a new high resolution spectral analysis method based on dynamic system model developed by professor Akihito Yamamoto and coworkers in 1980. This has been applied to the analysis of eigenvibrations of the Earth with a successful detection of the core modes and many other degenerate modes. This work triggered the development of mantle tomography by Fukao and coworkers, and further to the model of whole Earth tectonics unifying the plate tectonics and plume tectonics. ACROSS is an acronym of 'Accurately Controlled, Routinely Operated, Signal System' developed right after the Hanshin-Awaji disastrous earthquake (1995) as a basic study of earthquake prediction by means of non-destructive, active monitoring of the material properties in the deep focal region. Technology itself was successfully established by Dr. Takahiro Kunitomo as demonstrated by detecting the subtle change in amplitude (~1 femto meter) and phase (~1 micro second) of the seismic waves traveled probably to the subducting plate boundary and reflected back to the surface in Tokai area. Installation of ACROSS network in the west Japanese islands would be one of the most desirable renewal plans of the earthquake prediction research of Japan.

詳細は当センターホームページ: http://www.ehime-u.ac.jp/~grc/をご覧ください
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