Triplet eigenfrequencies of Slichter mode detected in the running spectra of the extensometer records

Ichiro Kawasaki[1]; Mamoru Kato[2]; Azumi Komaki[3]; Takashi Yanagidani[4]; Wataru Morii[5]; Kazuya Kokubo[6]; Makoto OKUBO[7]; Tsuneya Tsubokawa[8]

[1] DPRI, Kyoto Univ.; [2] Human and Environmental Studies, Kyoto Univ.; [3] Earth and Planetary Sci., Kyoto Univ; [4] RCEP, DPRI, Kyoto Univ.; [5] RCEP, DPRI, Kyoto-Univ.; [6] Earthquake prediction information division, JMA; [7] TRIES; [8] None

http://www.rcep.dpri.kyoto-u.ac.jp/~kawasaki/top.html

This is the followup of the previous report (Komaki et el., 2006) on detection of timedecaying triplet peaks in the theoretically predicted frequency band around 0.05 mHz (20,000 s) of the Slichter mode. The Slichter mode is the eigenoscillation of the Earth's inner core whose restoring force is the negative buoyancy at the inner-outer core boundary. Theoretically predicted initial and power spectral amplitude are orders of magnitudes of $10^{\14}$ strain $10^{\15}$(strain s)^2 assuming Q of 20.

The triplet peaks become below noise level within a few days and thus the apparent Q of the triplet peaks are around 20. Corrected for Q, the triplet frequencies are consistent with those predicted (Dahlen and Sailor, 1979) for 1066A with the density jump of 0.86 gr/cm^3 (Gilbert and Dziewonski, 1975) at the innerouter core boundary, rather than 0.60 gr/cm^3 predicted (Dahlen and Tromp, 1998) for PREM (Dziewonski and Anderson, 1981). This implies that the overall density of inner core is supposed to be larger by 23 % than that of PREM.

Komaki et al., A search for the Slichter mode excited by the 2004 great Sumatra-Andaman earthquake by use of the extensometer records in Japan, Japan Earth and Planetary Science Joint Meeting, S205-002, 2006.