

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**Elastic properties of ferromagnetic heavy fermion system  $\text{SmOs}_4\text{Sb}_{12}$**  YOSHIKI NAKANISHI, TOMOAKI TANIZAWA, TAKUYA FUJINO, ATSUSHI SUGIHARA, PEIJIE SUN, MASAHITO YOSHIZAWA, Graduate School of Engineering, Iwate University, HITOSHI SUGAWARA, Faculty of Integrated Arts and Sciences, The University of Tokushima, DAISUKE KIKUCHI, HIDEYUKI SATO, Department of Physics, Tokyo Metropolitan University — We report the elastic constants of the heavy fermion system  $\text{SmOs}_4\text{Sb}_{12}$  by means of an ultrasonic measurement. A steep decrease associated with the ferromagnetic transition was observed at around 2 K in elastic constants  $C_{11}$ ,  $(C_{11}-C_{12})/2$  and  $C_{44}$ . Furthermore a characteristic increase, possibly due to the “rattling-motion” was observed around 15 K in the elastic constants. The variation of the onset temperature and a degree of the increase as a function of the ultrasonic frequency is reasonably reproduced in terms of the Debye-type dispersion. The obtained parameters describing the rattling-motion such as a relaxation time, an activation energy and a mean square displacement will be discussed as compared with those of an isostructural compound  $\text{PrOs}_4\text{Sb}_{12}$ .

Yoshiki Nakanishi  
Graduate School of Engineering, Iwate University

Date submitted: 06 Dec 2005

Electronic form version 1.4