## One New Method and Its Parallelization of Perturbation Expansion for Coupled System of Acoustic and Structure

Deng Li<sup>1</sup>, Suzuki Masabumi<sup>2</sup>, Hagiwara Ichiro<sup>2</sup> <sup>1</sup>Japan Research Institute, Limited, Engineering Department Kudan Bldg. 1-5-3 Kudan-Minami,Chiyoda-ku,Tokyo, 102-0074 Japan and Tokyo Institute of Technology, Graduate School of Science and Engineering 2-12-1, O-okayama, Meguro-ku, Tokyo, 152-8552, Japan Email: deng@mech.titech.ac.jp, Tel: +82-3-5734-3630 <sup>2</sup>Suzuki Masabumi and Hagiwara Ichiro Tokyo Institute of Technology, Graduate School of Science and Engineering 2-12-1, O-okayama, Meguro-ku, Tokyo, 152-8552, Japan Email: hagiwara@mech.titech.ac.jp, Tel: +82-3-5734-3555

## ABSTRACT

We introduce a new method for coupled eigenvalue problem, its theoretical approach, finite element approximation and its error estimation, perturbation analysis and its parallelization.

**Keywords**: coupled eigenvalues, decoupled eigenvalues, and perturbation.