Division of Frontier Engineering	Research field	Dynamic Design	Lab. ID FE10
Laboratory web site	http://www.me.se.kanazawa-u.ac.jp/dyna/e/		

Research subjects

Our laboratory aims to solve the problems related to noise and vibration in mechanical and structural systems by developing theoretical and numerical analysis methods, active/passive control schemes. We also cover other dynamics-related problems, such as the development of intelligent systems and energy harvesting systems. Major research activities are as follows.

●Identification of the dynamic responses of collision systems: numerical modeling of a collision system, such as the system consisting of a golf ball and a club through the observation of impact behavior.

●Active/semiactive/passive vibration control systems: development of vibration control devices, absorbers, isolators, by the use of passive and functional materials and actuators, and also by utilizing nonlinear effects.

●Active/passive noise control systems: development of an active noise control system for cancelling noises within local space by using a feedback control scheme, a directional control source, etc.

●Development of intelligent structural systems: smart materials are used for the development of intelligent control systems, haptic interface devices, soft sensors / actuators.

●Research on Metamaterials and metastructures: metamaterials are artificial materials whose wave transmission characteristics can be adjusted to produce the peculiar wave phenomena, such as reflection, diffraction, absorption, etc. We aim to develop a new metamaterial structure for vibration and noise control.

●Development of energy harvesting systems: use of piezoelectric materials and magnetostrictive materials for harvesting energy from various vibrating sources in the form of electricity.

Master/Doctor course: Education policy, curriculum, typical activity in the laboratory

●Laboratory students join a weekly seminar reviewing the past studies related to their research topics. The seminar provides opportunities to discuss with all members on the reviews presented by the students. The presentation is given in rotation.

●The students normally determine their research themes based on their proposals and on the discussion with instructors up to mid-Apr. At least a weekly report on their research progress to the instructor is mandatory.

Daily life in the laboratory, etc.

●We prepare a desktop PC for each student. We also prepare shared PCs installed with some analytical software for CAD, FEM, and data processing.

●Opportunities for extracurricular activities: camping and hiking in Summer, skiing in Winter.

●Laboratory students are all on good terms with each other. They do voluntary activities such as barbecues, football matches, etc.

Message or comments by the laboratory faculty staffs

●Joining academic conferences is strongly recommended.

●Please be in a planned and consistent way doing your research activity. But don't put off what you can do today until tomorrow.

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