

Division of Mechanical Science and Engineering	Research field	Dynamic Design	Lab. ID
			MS25
Laboratory web site	<a href="http://www.me.se.kanazawa-u.ac.jp/dyna/">http://www.me.se.kanazawa-u.ac.jp/dyna/</a>		
Research subjects			
<p>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.</p> <ul style="list-style-type: none"> <li>● Transfer path analysis (TPA) for antivibration design: Identifying paths contributing to the transmission of kinetic energy between vibration sources and target points in coupled structures.</li> <li>● 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.</li> <li>● Active/passive noise control systems: Development of an active noise control system for cancelling noises within local space by the highly directional control source, deflection of propagating sound waves using diffraction phenomena.</li> <li>● Development of intelligent structural systems and energy harvesting systems: Smart materials are used for the development of intelligent control systems, haptic interface devices, energy harvesting systems, etc.</li> </ul>			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
<ul style="list-style-type: none"> <li>● 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.</li> <li>● 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.</li> </ul>			
Daily life in the laboratory, etc.			
<ul style="list-style-type: none"> <li>● We prepare a desktop PC for each student. We also prepare shared PCs installed with some analytical software for CAD, FEM, and data processing.</li> <li>● Opportunities for extracurricular activities: camping and hiking in Summer, skiing in Winter.</li> <li>● Laboratory students are all on good terms with each other. They do voluntary activities such as barbecues, football matches, etc.</li> </ul>			
Message or comments by the laboratory faculty staffs			
<ul style="list-style-type: none"> <li>● Joining academic conferences is strongly recommended.</li> <li>● Please be in a planned and consistent way doing your research activity. But don't put off what you can do today until tomorrow.</li> </ul>			
Recent Master theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2017.3	Development of haptic device using magnetorheological elastomer		
2017.3	High performance miniature vibration energy harvester using folded spring and nonlinear circuit		
2017.3	Effect of Face Stiffness on Golf Ball Spin		
2017.3	Semi-active control of vibration isolator using magnetorheological elastomer		
2017.3	Development of magnetorheological compounds and their application to braking device		
2017.3	Development of Vibration Suppression Device Using Impact of Cantilever Type Vibrator		
2016.3	Development of a Dynamic Damper using Magnetorheological Elastomer		
2016.3	Study on Energy Flow Estimation by SEA		
2016.3	Study on Deflection of Propagating Sound Waves using a Standing Wave		
2016.3	Damping Property of High-damping Alloy and its Application to Dynamic Damper		
2016.3	Development of an Anti-vibration Device for Transport using Magnetorheological Fluid		
2016.3	Vibration Behavior of Basilar Membrane in Cochlea Using Viscoelastic Material		
2015.3	Study on Suppression of Floor Vibration by Using Collision of Vibrators		
2015.3	Study on Operational Transfer Path Analysis Method Using Additional Mass		
2015.3	Study on Hit Property of Golf Ball during Oblique Collision		
2015.3	Fault Diagnosis of a Bearing by a Stochastic Resonance		
2015.3	Development of a Stiffness-variable Vibration Isolator Using Magnetorheological Elastomer		
2015.3	Sound Source Identification using Acoustic Beam Forming		
2015.3	Investigation of a Can Opening Sound of Embossed Beverage Cans		
2014.3	Study on Vibrating Transportation Using Elliptical Vibration Motion		
2014.3	Study on Real Time Measurement of Sound Intensity		

2014.3	Fundamental Study on the Seismic Responses of Structures and the Avoidance of Their Rollovers
2014.3	Vibration Control of a Beam by a Variable Stiffness Support using MRE
2014.3	Development of an Adaptive-tuned Dynamic Absorber using Magnetorheological Elastomers
2013.3	Damping Measurement of Structure by Random Decrement Technique
2013.3	Study on Optimal Impact Damper Using Collision of Vibrators
2013.3	Modelization and Simulation on Oblique Collision of Golf Ball
2013.3	Study on Operational Transfer Path Analysis Method for Structure with Fundamental Excitation
2013.3	Prediction of an Impact Point Based on Vibration Responses of Structures
2013.3	Study on the Dynamic Responses of an Aluminum Beverage Bottle Can
2013.3	Semi-active control of structures using Magnetorheological Elastomers
Recent Doctoral theses in these 3 years (+ more if appropriate)	
year.month	Thesis title (including English translation of Japanese thesis title)
Laboratory mail address	Yoshio Iwata <iwata *at* se.kanazawa-u.ac.jp>