

Division of Mechanical Science and Engineering	Research field	Applied Optical Physics	Lab. ID ME03
Laboratory web site	https://sn-lab.w3.kanazawa-u.ac.jp/mechphyslab https://sn-lab.w3.kanazawa-u.ac.jp/		
Research subjects			
In our laboratory, studies on optical measurement and display, advanced laser-based measurement, and brain-inspired photonic information processing are conducted currently. In the research of the optical measurement and display, we have been studying three-dimensional measurement and display techniques using holography. We are also studying image processing techniques and high-speed computation using GPU and FPGA. In the research of the advanced laser-based measurement, we are carrying out researches on the advanced optical measurement technology that are capable of measuring variety of subjects ranging from mechanical materials to living tissues in a non-invasive manner. By applying precise laser-control technology, we are developing novel type of lasers such as variable coherence lasers and phase-locked two-mode lasers, as well as lightwave detection technique using superconductive materials. Their applications include highly sensitive measurement of Terahertz waves and high precision brain activity measurement. We have been also studying dynamical photonic systems from the perspectives of nonlinear/complex science and aiming at fast, efficient, and intelligent information processing. Particularly, we are interested in photonic neural networks and reservoir computing with complex optical phenomena.			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
Students who are once assigned to our laboratory will be divided into three teams depending on their favorite research themes. They are supposed to take part in seminars, and do their research works under the instruction of their teachers. Each team conducts specific seminars once or twice a week, where students are supposed to present their progress reports and make discussions on their research topics. Most of the students will also work on experimental researches under the instruction of their teachers, whereas some students will entirely work on computer-based researches. In any team, students will be able to acquire comprehensive knowledge and experiences from the fundamental level to the advanced one for their researches. Depending on their research themes, students will be also able to learn about electronic circuits, high-frequency radio-wave technology, image-processing technology, and handling of precise optical equipment. It is also possible to master useful programming languages such as LabVIEW, Fortran, C, and Python.			
Daily life in the laboratory, etc.			
Each student is provided with a personal desk and a personal computer, and the students are able to freely carry out their research work. They are divided into three teams, depending on their research themes, and the teacher in charge will take excellent care of them. Since both undergraduate and graduate students work together, students are easy to obtain their seniors' advices, and can quickly get used to the laboratory life. It is recommended that the students spend regular life by coming to the lab. in the morning, and actively discuss with each other for their researches.			
Message or comments by the laboratory faculty staffs			
Since we are carrying out variety of leading-edge researches using lasers and lightwaves, students are encouraged to present their research outcomes at academic conferences. Although it never be an easy thing to wrap up a respectable graduation thesis or master's thesis, an experience which was accomplished with considerable difficulty, must become a property over the course of your lifetime. Do not regret your effort, set higher goals, and please try to challenge in everything! We are ready to support any motivated students with utmost effort.			
Laboratory mail address	Laboratory of Mechano-Physics <amech-physlab*at*ml.kanazawa-u.ac.jp>		