

| Name<br>KITAMURA Takuya                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Job Title<br>Assistant Professor | Area of Expertise<br>Fluid Mechanics |
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| <p><b>1. Main Research Topics</b></p> <p>Turbulence is a significant phenomenon that appears across a vast range of spatiotemporal scales—from quantum to cosmic—and affects a wide variety of fields, including weather forecasting, the design of aircraft and automobiles, mixing and diffusion of heat and substances, and our understanding of oceanic and space environments. However, its behavior is extremely complex, and many aspects remain unresolved to this day. We are conducting fundamental research in fluid dynamics, with a focus on turbulence, in the following areas:</p> <ol style="list-style-type: none"> <li><b>① Statistical Theory of Turbulence</b><br/>We are conducting mathematical analyses to elucidate the statistical laws of turbulence.</li> <li><b>② Numerical Simulation of Turbulence</b><br/>We perform numerical simulations of turbulence using supercomputers.</li> <li><b>③ Experimental investigation of Turbulence</b><br/>We conduct turbulence measurements using hot-wire anemometry.</li> </ol> <div data-bbox="204 689 1401 1352"> </div>                                                                                                                                                                                           |                                  |                                      |
| <p><b>2. Keywords</b><br/>Fluid Mechanics, Turbulence</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                  |                                      |
| <p><b>3. Remarks and Websites</b></p> <p><b>Features:</b> Our research focuses on both fundamental and applied aspects of fluid phenomena using a three-pronged approach: theoretical analysis, numerical simulation and experiment.</p> <p><b>Research Achievements:</b> Publications include <i>Journal of Fluid Mechanics</i>, Vol. 1010 (2025), A14, among others.</p> <p><b>Future Outlook:</b> In addition to contributing to fundamental research in fluid dynamics, we are committed to promoting its practical implementation through applied studies.</p> <p><b>Ongoing Projects:</b> JSPS KAKENHI Grant-in-Aid for Scientific Research (C), 2025<br/> /JHPCN-Q: “Parallel Computation of High-Reynolds-Number Turbulence Using Compact Finite Differences and Investigation of Turbulence Universality”<br/> /Development Research: “Wind Tunnel Experiments on the Development of a High-Reynolds-Number Turbulence Generator for Offshore Wind Power and Its Impact on Wind Turbine Performance”</p> <p><b>researchmap:</b> <a href="https://researchmap.jp/tk-0426">https://researchmap.jp/tk-0426</a><br/> <b>Laboratory:</b> <a href="https://www.mech.nagasaki-u.ac.jp/lab/kitamura_lab/index.html">https://www.mech.nagasaki-u.ac.jp/lab/kitamura_lab/index.html</a></p> |                                  |                                      |