

2025 年度 核融合科学研究所 第 14 回 ITER 国際スクール参加支援  
実施報告書

IIS2025 参加支援			
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派遣期間	2025 年 6 月 28 日 ～ 2025 年 7 月 6 日（9 日間）		
得られた成果等 （行数は適宜増や してください）	<p>1. 本スクールでの印象に残った講義やイベント等 Several lectures were particularly impressive for their depth and relevance to integrated modeling in fusion research:</p> <p>Core + Edge Gyro-Kinetic Integrated Simulations by Dr. J. Dominski showcased advanced simulations addressing impurity transport and turbulence, with validation against WEST and applications to ASDEX-U plasmas.</p> <p>Integrated Modelling for Fast Particles &amp; MHD by Dr. Ph. Lauber provided a clear overview of energetic particle transport mechanisms and modeling approaches, highlighting the importance of multi-scale coupling in ITER predictions.</p> <p>Integrated Modelling of Disruptions by Dr. D. Hu emphasized the complex physics of disruptions and the need for 3D modeling tools like JOEUK and IMAS to simulate mitigation strategies such as SPI.</p> <p>These lectures deepened my understanding of whole-device modeling and its role in solving key challenges for ITER and future reactors.</p> <p>2. 本スクールに参加して新たに得られた知見や技能等</p> <p>Through the ITER Summer School, I gained a comprehensive understanding of the current landscape and challenges of integrated modelling in magnetic confinement fusion. Key takeaways include:</p> <p>Advanced integrated modelling concepts: I learned how different plasma regions (core, pedestal, SOL) and physical processes (transport, turbulence, heating, disruptions, impurity dynamics) are coupled in predictive simulations. The lectures emphasized the need for multi-scale and multi-physics integration to support reactor-scale devices like ITER and DEMO.</p> <p>Tools and infrastructures: I was introduced to powerful modeling frameworks such as JINTRAC, IMAS, and TORAX, as well as supporting platforms like synthetic diagnostics and flight simulators. These tools are crucial for predictive modeling, scenario planning, and control development.</p> <p>Cutting-edge developments: I discovered how machine learning techniques are being applied to accelerate high-fidelity simulations and uncertainty quantification. New approaches such as differentiable simulation and AI-based surrogate models are now becoming practical in fusion modeling.</p> <p>Overall, the school provided me with both theoretical insights and practical exposure to state-of-the-art modeling tools, enhancing my ability to contribute to integrated simulation work in future research.</p>		

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	<p>3. 他国の参加者との交流状況について</p> <p>During the poster session, I presented my research titled "Kinetic Effects of Thermal Ions on Internal Kink Modes in Tokamak Plasmas". This provided a valuable opportunity to engage in in-depth discussions with participants from various countries. I received insightful feedback and exchanged ideas with researchers working on related topics.</p> <p>In addition to presenting my work, I explored many other posters covering diverse and fascinating aspects of fusion research. These interactions not only broadened my perspective but also helped me establish connections with potential future collaborators, with whom I exchanged contact information for further academic engagement.</p> <p>4. 自分自身の今後の研究・職務等への効果について</p> <p>Participating in the ITER Summer School significantly deepened my interest in integrated modelling. The lectures and discussions provided a clear picture of the complexity and importance of whole-device simulations in supporting future fusion reactors like ITER.</p> <p>As a result, I am planning to shift the focus of my research toward integrated modelling in the next phase of my academic work. I hope to apply the knowledge and tools I gained during the school to real projects, possibly contributing to collaborative simulation efforts within the fusion community.</p> <p>5. その他、特筆すべき事項、重要な課題、スクールの感想、事業への要望等</p> <p>Overall, the ITER Summer School was very well organized, with high-quality lectures and valuable opportunities for academic exchange. I appreciated the efforts of the organizers in creating a productive and international learning environment.</p> <p>One issue worth mentioning was the unusually hot weather during the event. The provided accommodation lacked air conditioning, which made it somewhat uncomfortable. I would suggest that future participants be clearly informed of such conditions in advance, so they can prepare accordingly.</p> <p>Despite this, I found the experience highly rewarding and would be glad to participate in similar programs again in the future.</p>
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