（別紙様式８）

2025 年度　核融合科学研究所スクーリング・ネットワーキング事業
実施報告書

学生インターンシップ			
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研修期間	2025 年 10 月 26 日　～　2025 年 11 月 9 日（15 日間）		
研修先機関及び受入責任者	機関等名： Tokamak Energy 受入責任者名：[redacted] E-mail:[redacted]		
得られた成果等（行数は適宜増やしてください）	1. 本事業によって得られた成果のうち特筆すべき事項 Tokamak Energy is one of the world’s leading commercial fusion companies. During the visit to Tokamak Energy this time, I entered the control room and participated in two weeks’ operation, which was to explore various center solenoidless startup concepts combined with merging compression startup for future commercial fusion reactors. The operation, oriented to industrial fusion reactor, achieved ion temperature over 1 keV. Compared to ion temperature of around 30 eV on our TS6 device, the measurement opened a few possible research topics closely related to my doctoral thesis: 1. the role of pushing force on ion heating during magnetic reconnection, 2. triggering mechanism for increased ion heating in magnetic reconnection. Additionally, Dr. Hannah Willet, a plasma spectroscopy expert, guided me through some of the most important spectroscopic techniques and the ion diagnositcs on ST40. The precious experience enabled several possible improvement directions for my ion measuring systems on TS6: 1. high presion camera instrument temperature calibration and 2. novel spectroscopoic measurement using multiple lines. 2. その成果が核融合分野の人材育成に果たした（果たすと期待される）事項 As a PhD student, the visit to TE enabled me to know a real industrial level fusion reactor. I learned how the industrial reactor was managed, maintained, operated and analyzed, which are all totally different to my experience inside university laboratory. This experience reshaped my motivation as a future fusion science researcher and enabled a few research topics that is closely related to my doctoral thesis. 3. 研修先研究者（グループ）の熱意，態度，研究レベル等に関して参考となる事項 It was such a great experience to go to ST40 and had the opportunity to not as a student, but as an employee to do the internship among many fascinating collegues. Takase Sensei, a retired professor from the University of Tokyo now working at Tokamak Energy, deeply motivated me with his passion for fusion		

	science even at this age of life, and inspired my determination as a future researcher in this field. Peter Buxton, a team leader of the modelling and simulation group, included me in a few discussions on the programs that his team is developing, and his working style and leadership showed me how industrial fusion science is taking place. During everyday's lunch time, I talked to other PhD students from all over the world. Their different perspectives from Europe and America enabled me to think about my career path as a fusion science researcher with a broader horizon. 4. 今後改善すべき点について参考となる事項 The company account took a few days to be ready, and that significantly delayed our participation in the operation. Additionally, the invitation letter was delayed to issue, causing my schedule to be very tight and frequently modified. Perhaps next time it is better to prepare the paper files a few days before the arrivel in TE.

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	5. 本年度に引き続き次年度も同じ目的（あるいはそれに準ずる目的）で研修を計画している場合，本年度と異なる点及びその理由 Tokamak Energy is now suspending all experiments and starting their installation of a GW gyrotron, engineered by Fusioneering, to the ST40 device, to explore further plasma heating scenarios. Different to this time's exploration, which is mostly on commercialization concepts, next year's experiment may target even higher plasma parameters. TE is a big company, and their devices, diagnostics, and analysis tools take a long time to master. If another trip can be expected next year, I expect a more independent and more immediate research project outcome in a broader physics phenamena. 6. 研修の概要，特に重要な課題などについて During this visit, I participated in a two-week operation exploring various center solenoidless startup concepts combined with merging compression startup for future commercial fusion reactors. The experience enabled several possible research topics for my future PhD thesis. Additionally, the spectroscopic techniques learned at TE inspired several improvements for my measuring systems on TS6 at the University of Tokyo. Besides the research related experience, I met, knew and talked to a variety of people from all over the world working in fusion science. Their perspectives deeply reshaped and motivated my career determination as a fusion science researcher.
インターンシップにおける単位認定状況	□単位認定済　　□希望しなかった　　☑制度なし
備考	