

# Fusion Innovation Bootcamp: Advancing Public-Private Partnerships to Drive Fusion Energy Solutions

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## Introduction

The **Fusion Innovation Bootcamp (FIB)** seeks to foster and strengthen public-private partnerships in support of advancing fusion energy solutions. FIB is a **transformative two-week initiative** that connects students with fusion industry professionals, researchers from national laboratories, and university faculty to cultivate entrepreneurship and innovation in the fusion supply chain.

FIB is modeled after the successful **Nuclear Innovation Bootcamp (NIB)**, which was launched in 2016 at UC-Berkeley. NIB strengthened the public-private partnerships, drove nuclear innovations, and witnessed significant workforce retention in the nuclear field.

NIB alumni who are currently contributing to the fusion energy field (not a complete list):

Name	Year of NIB	Organization	Position
Richard Pearson	2016	Kyoto Fusioneering (until July 2025)	Co-Founder
Alyssa Hayes	2017	University of Tennessee	Ph.D. student (plasma-material interactions)
Yuqiao (Joy) Fan	2018	ORNL	Blanket, Fuel Cycle, and Fusion Engineer
Sara Ferry	2019	MIT	Group Leader-Fusion Materials and Components
Pierre Clement Simon	2019	INL	Computational Materials Scientist
Diana Grandas	2022	EPRI	Fusion Energy Research Analyst

### FIB goals in talent cultivation:

- (1) encourage students to expand their knowledge **outside traditional coursework** & tackle **real-world challenges** in fusion applications;
- (2) attract **non-nuclear/non-STEM** students and spark their interest in fusion. Note: in the future, as fusion reactors move toward commercialization, there will be critical needs for professionals from various fields such as **law, business, economics, public policy, social sciences, communication, environmental studies, and more.**

## Advancing Fusion Energy Innovation

Year 1 (2025)	Year 2 (2026)		Year 3 (2027)				
Fall	Spring	Summer	Fall	Spring	Summer	Fall	
<b>FIB 2026 planning</b>	<b>Application (students) Confirmation (professionals)</b>	<b>FIB (pilot) 15 students</b>	<b>FIB 2027 planning</b>	<b>Application (students) Confirmation (professionals)</b>	<b>FIB (expanded) ~22 students</b>		

Currently, FIB is funded by the DOE FES-RENEW program. Below is a list of partnering universities and private fusion companies contributing to its success.



**FIB & INFUSE: sharing the mission to foster public-private partnerships critical for fusion energy advancements.**

### Future plans:

- Sustain FIB through public and private funding mechanisms beyond 2027.
- Explore potential collaboration with the Clean Air Task Force (CATF) for administrative support, similar to the role played by the Nuclear Innovation Alliance (NIA) in managing NIB.

### Action items:

- Would you like to be speakers, panelists, mentors, or judges in FIB 2026?
  - Let Joy know ([fany1@ornl.gov](mailto:fany1@ornl.gov)) and mark you calendar (June 15-26, 2026); we will confirm in March/April 2026.
- Share FIB with your colleagues to gauge their interest in participating.

Together, we can inspire the next generation of fusion professionals and spark creative solutions for critical challenges in the fusion energy field.

**“Be part of shaping the future of fusion energy!”**

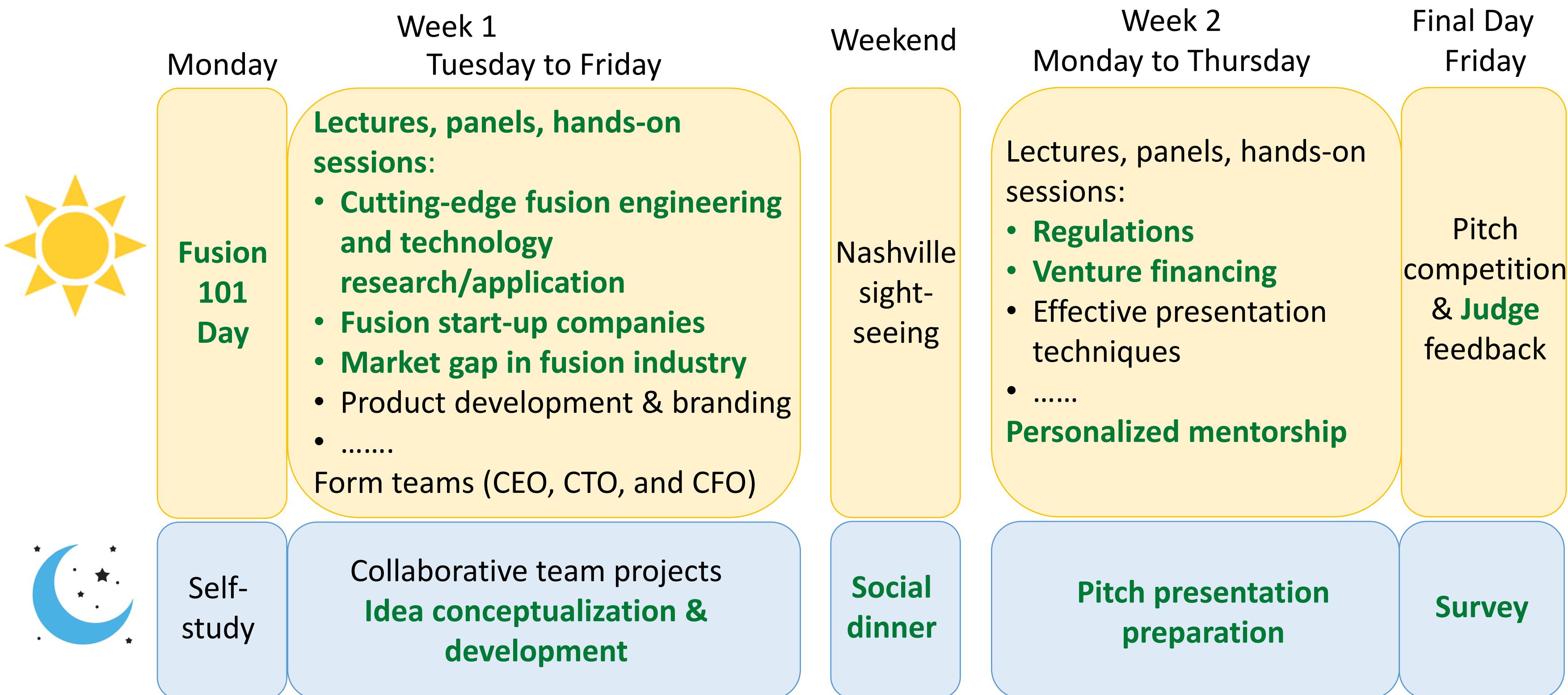
## Theme and Structure of Fusion Innovation Bootcamp 2026

**FIB 2026 theme: fusion supply chain or workforce development challenges**

**June 15-26, 2026 at Tenn. State University in Nashville, TN**

**Bolded activities: need private company professionals to involve!**

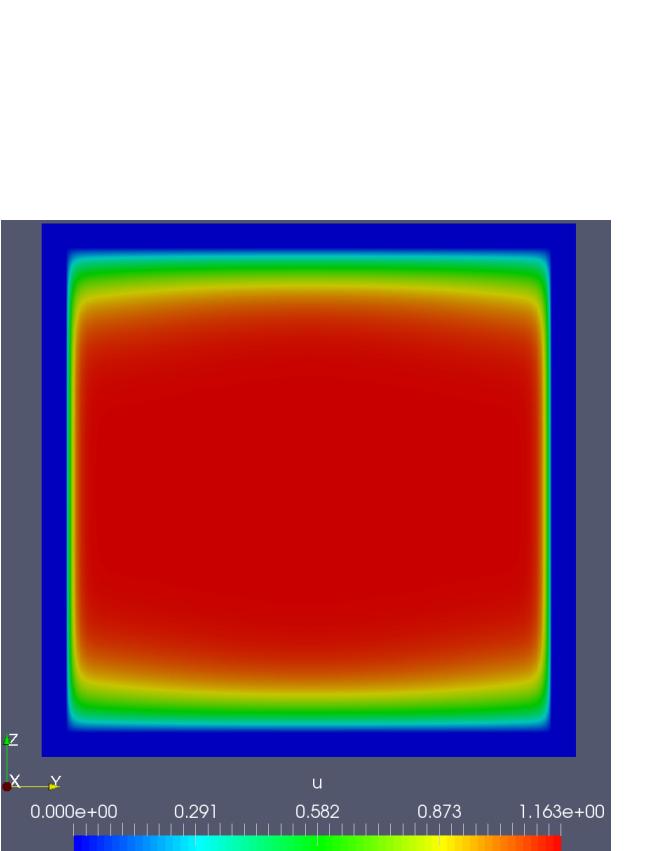
- Speakers: deliver talks on fusion engineering and technology (half-day/talk)
- Panelists: engage in panel discussions on fusion topics (half-day/panel)
- Mentors: help students to conceptualize and present (1~2 hours over 4~7 days)
- Judges: evaluate pitch presentations to select a winning team (two half-days)



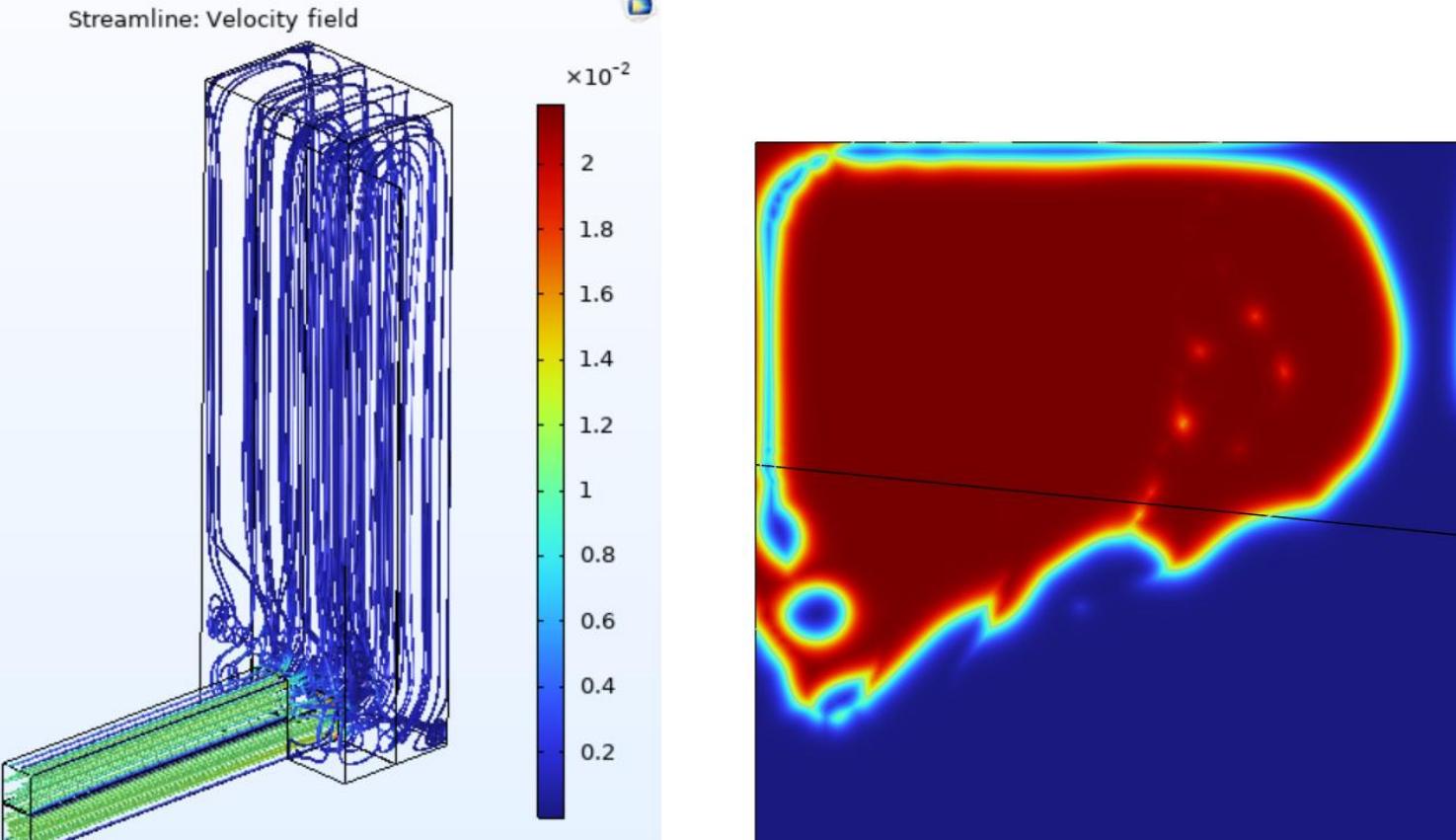
## Expanding Opportunities for Collaboration

The studies listed below focus on Joy's research projects relevant to blanket and fuel cycle technologies. These topics can enrich FIB's curriculum by contributing to the Fusion 101 Day and seminars (cutting-edge fusion engineering and technology).

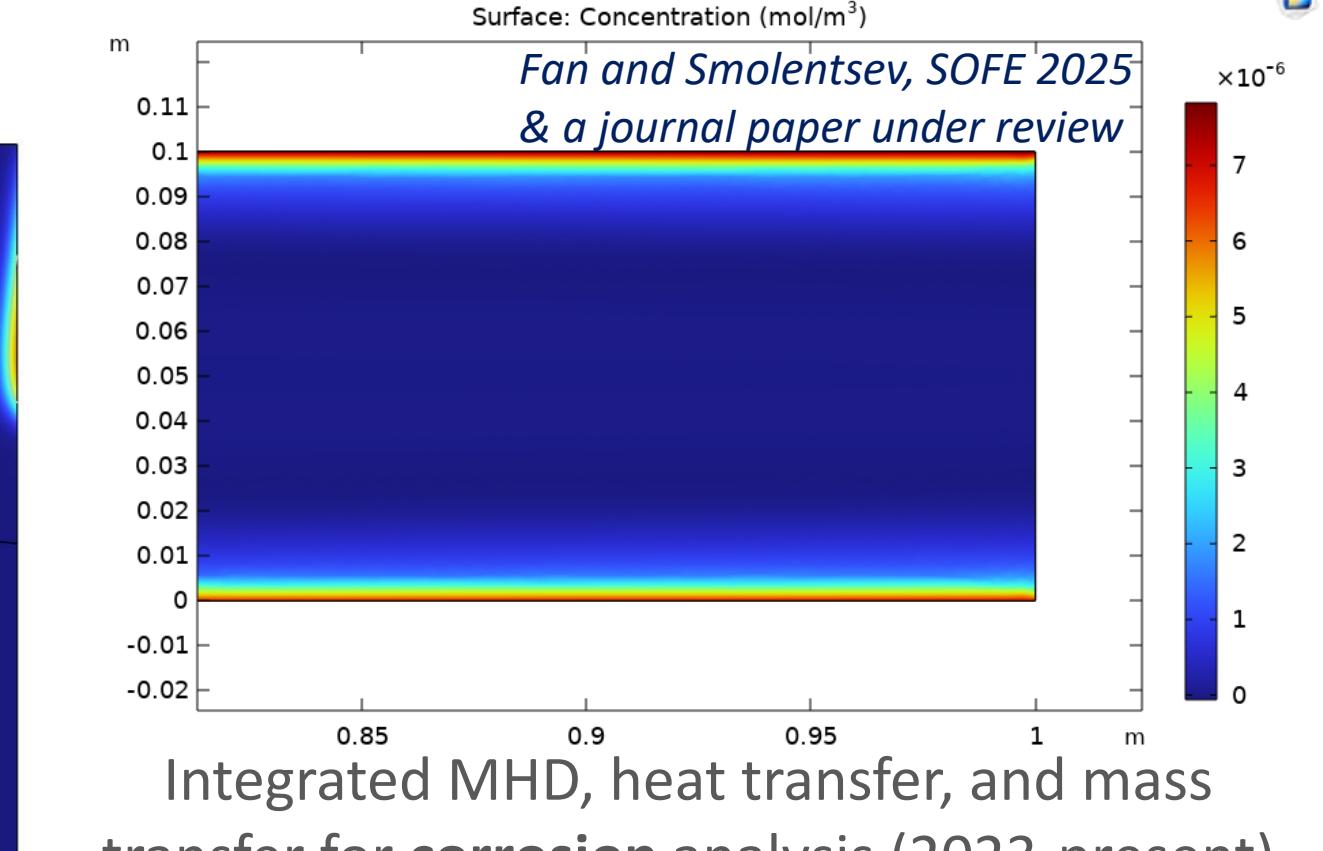
*Fan and Smolentsev, APS-DFD 2023*



Liquid metal high  $Ha$  MHD flow, e.g. duct flow's cross section (2022-present)

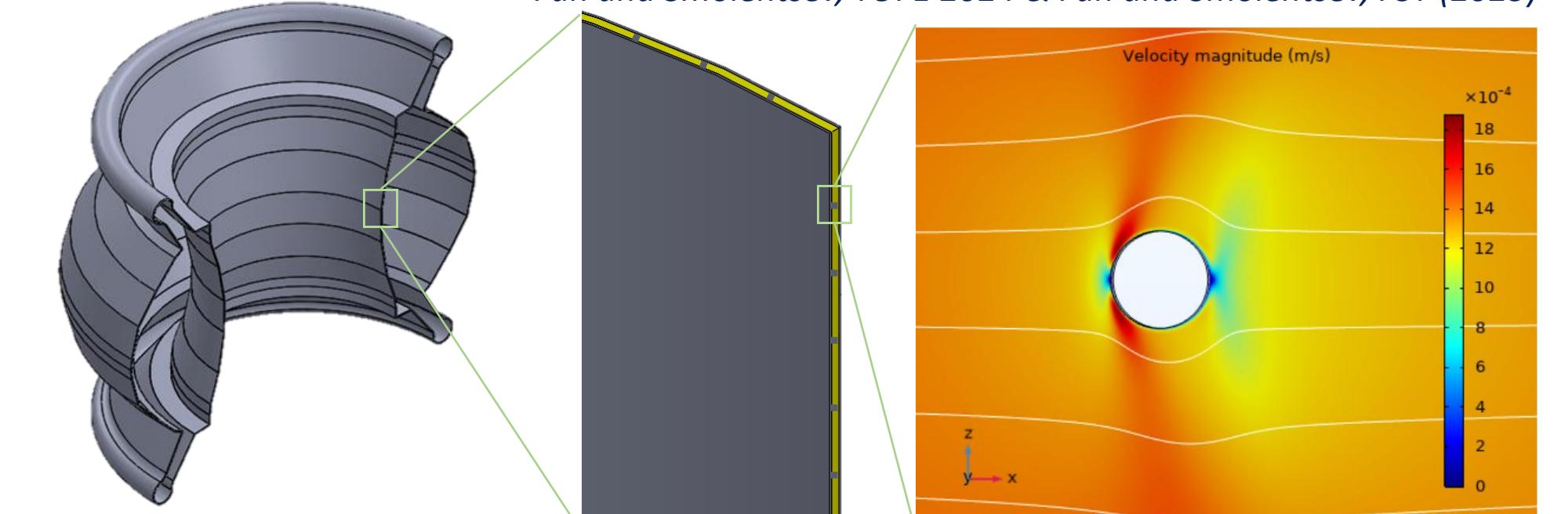


Complex geometry MHD flow analysis, e.g. blanket feeding channel optimization (2022-present)

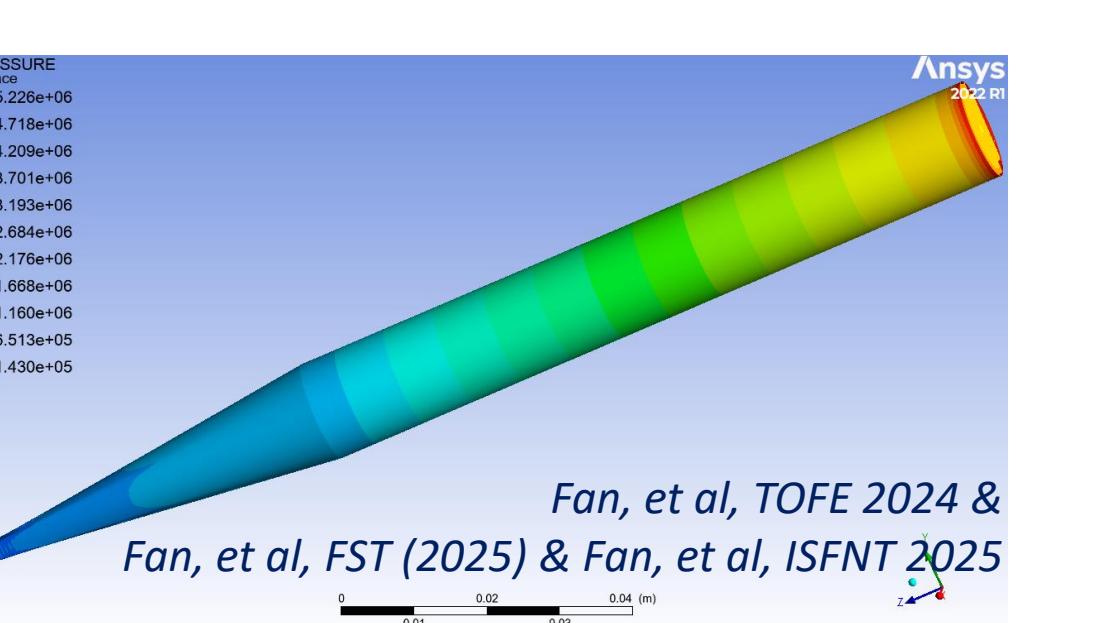


Liquid metal two-phase flow e.g. droplet formation & gas entrainment (PhD, 2024-present)

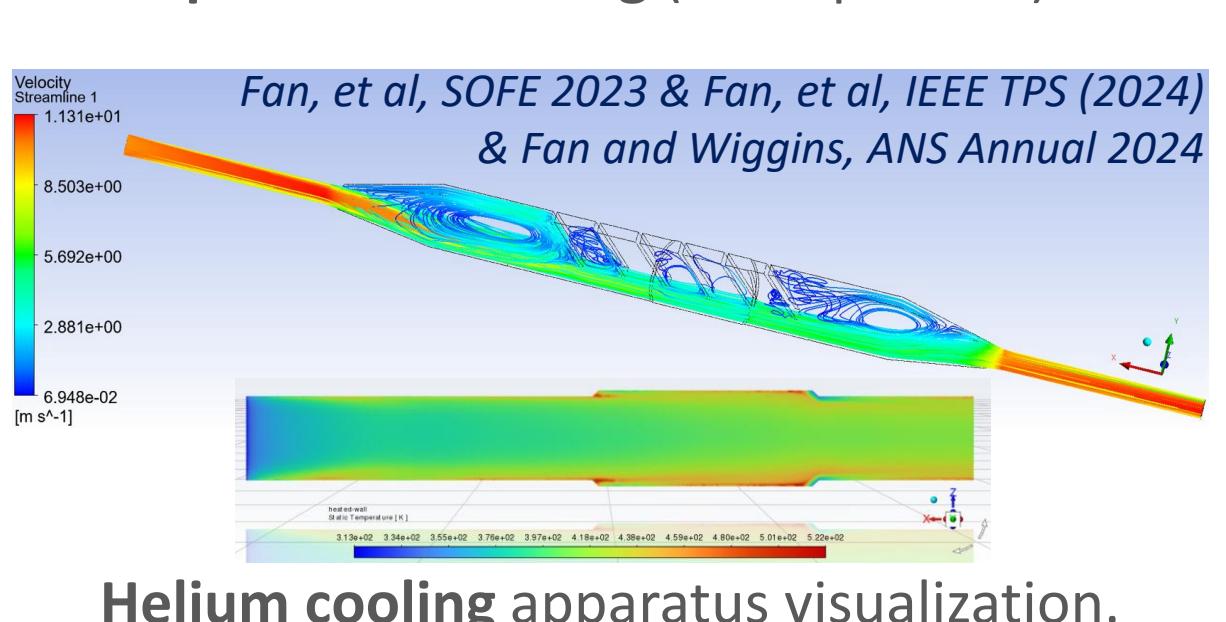
*Fan and Smolentsev, TOFE 2024 & Fan and Smolentsev, FST (2025)*



Noval blanket candidate feasibility study, i.e. Toroidally Symmetric Lead Lithium (TSL) blanket, with MHD flow around a structural element called "anchor link". Selected tasks: reduced order model (ROM) & AI surrogate model development and high-fidelity transient MHD simulations. LDRD PI (2025-2027)



Extrusion simulation of cryogenic hydrogen pellets for fueling (2022-present)



Interested professionals are invited to explore collaborative pathways that intersect with these research topics!