

FSU

WELCOME

2024 Postdoctoral Fall Symposium

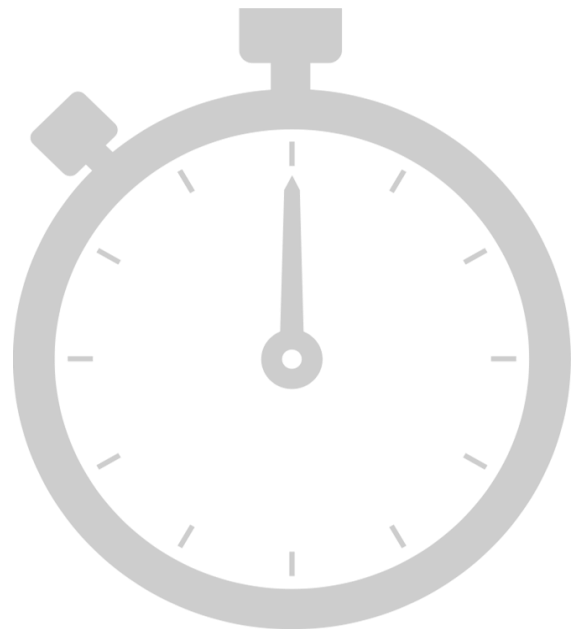
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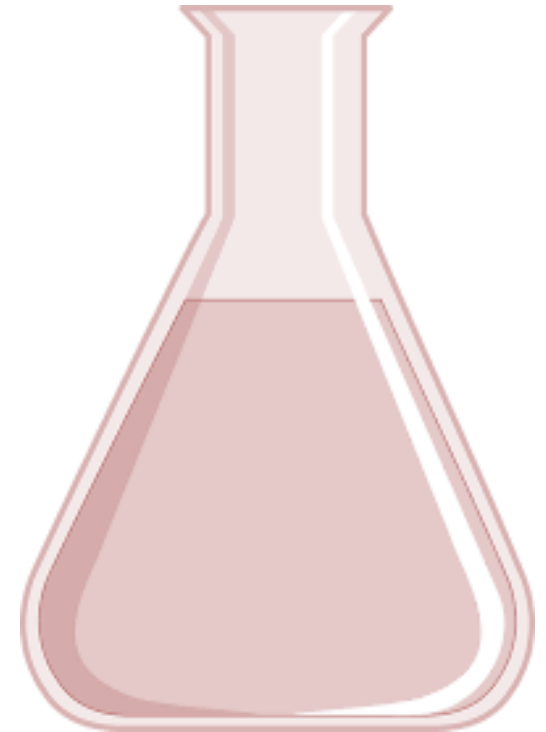
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The Office of Postdoctoral Affairs

Presents:



**FIVE
MINUTE
RESEARCH**
POSTDOC COMPETITION



Florida State University

THANK YOU TEAM!

Srivalli Dorasetty
Application Developer, Designer

Francis Ebuara
Graduate Assistant - Office of Postdoctoral Affairs

Jakub Hruby
Postdoctoral Scholar MagLab

Keith McCall
Acting Director Office of Graduate Awards & Fellowships

Audrey Livingston
Graduate Enrollment Specialist

Thais Pedrete
*Postdoctoral Scholar in Chemistry
Past Senior Advisor*

Joy Stein
Event Administrative Specialist

Diana Paquette
College of Medicine Coordinator

Geoset Studios!
Kyle Wilson

Postdoctoral Association Leadership Team! - *Olivia Cook (President), Kasey Longley (Vice President), Betsy Mansfield (Senior Advisor), Luna Hiron (Past Senior Advisor), and Mohammad Nooranidoost (Past Senior Advisor)*

THANK YOU JUDGES!

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Karema Harris
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Anna Prentiss
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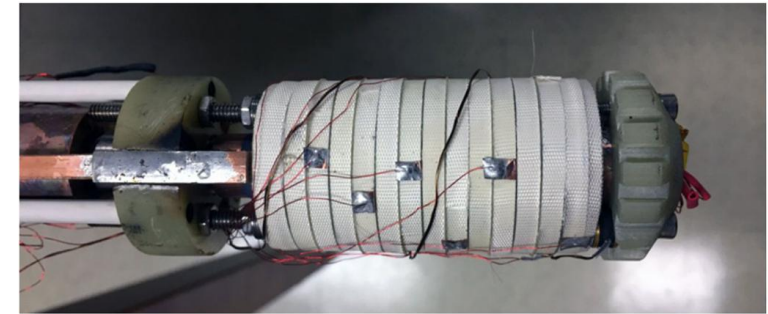
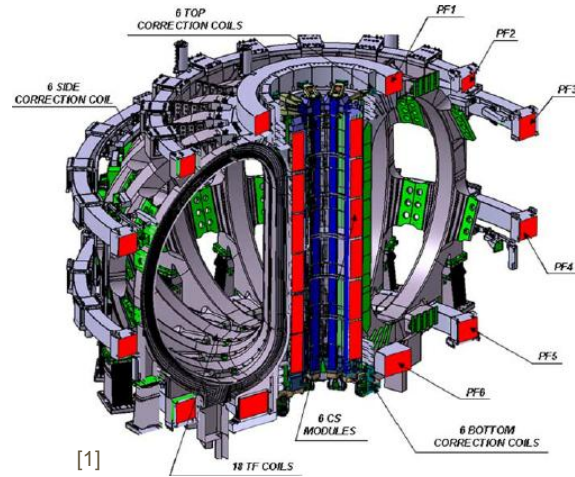
Shannon Griffin

National High-field Magnetic Laboratory

Engineering Superconducting Magnets via Structural Simulations

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Earth
0.00005 T

MRI
1.5 T

Fridge
Magnet
0.001 T

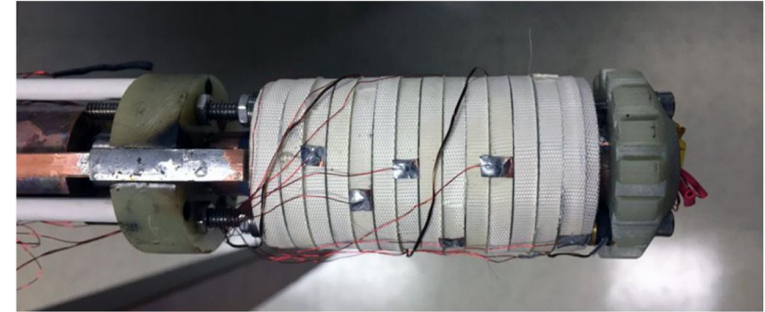
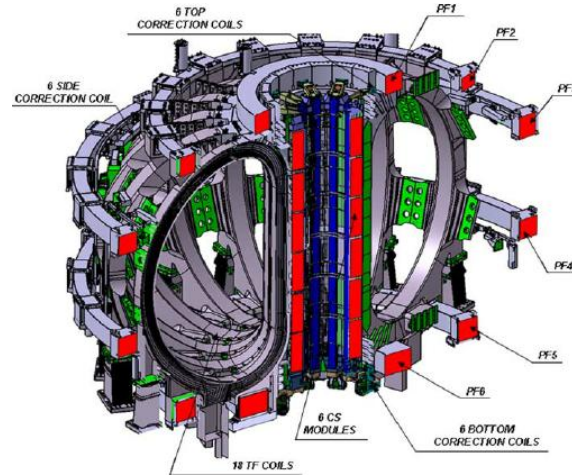
ITER Fusion
Reactor
13 T

NHMFL
45.5 T





Permanent magnet



NHMFL
45.5 T

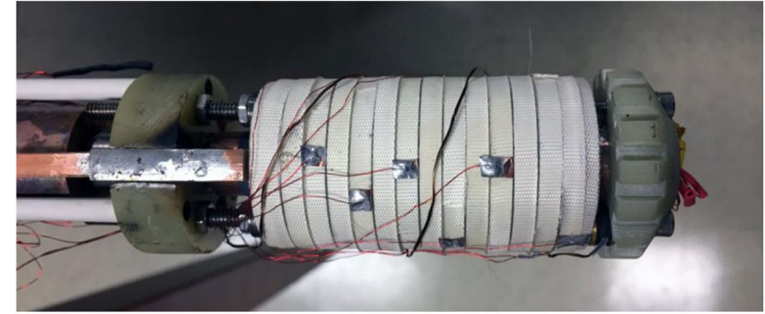
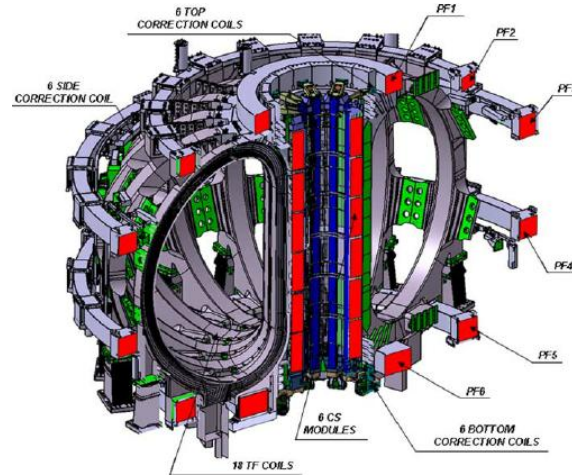
Earth
0.00005 T

MRI
1.5 T

Fridge Magnet
0.001 T

ITER Fusion Reactor
13 T





Earth
0.00005 T

MRI
1.5 T

Fridge
Magnet
0.001 T

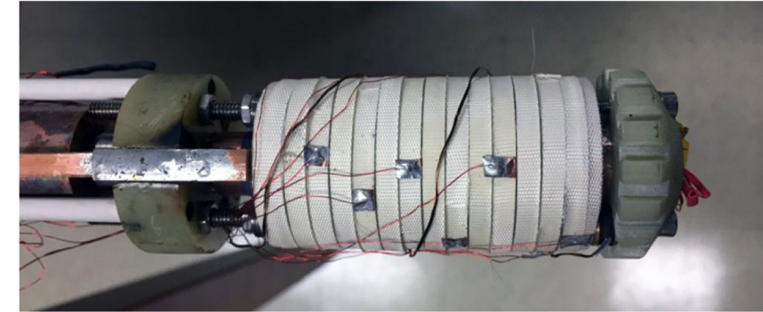
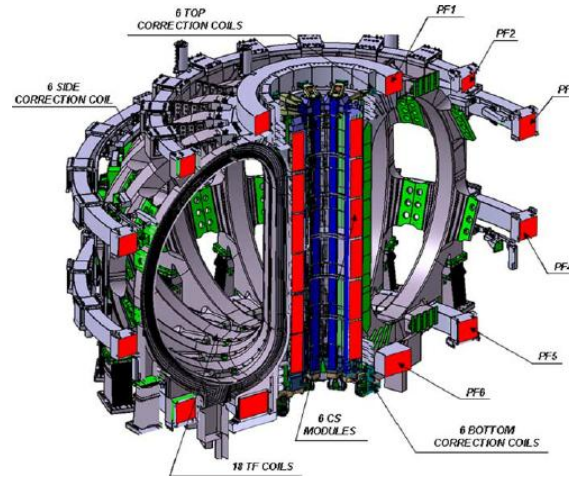
ITER Fusion
Reactor
13 T

NHMFL
45.5 T

Superconducting magnets



HIGH MAGNETIC FIELDS!!



Earth
0.00005 T

MRI
1.5 T

Fridge
Magnet
0.001 T

ITER Fusion
Reactor
13 T

NHMFL
45.5 T

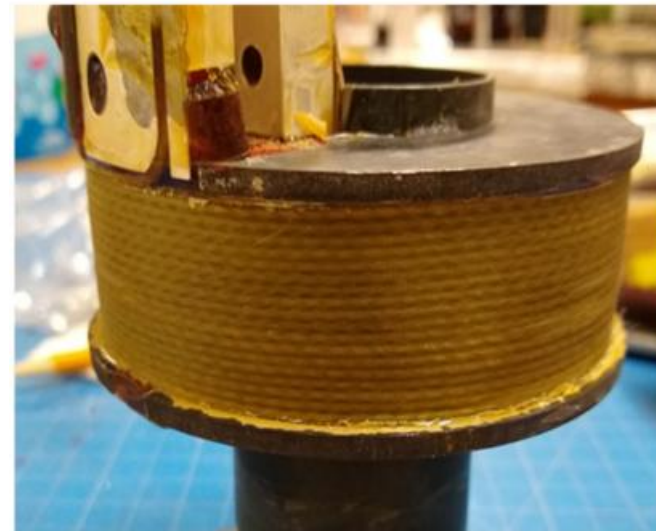
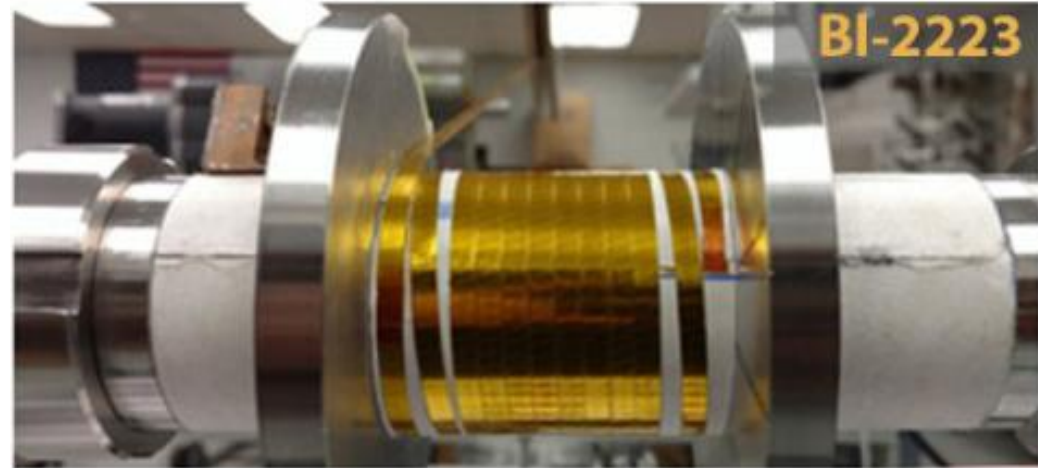
Superconducting magnets



40T Project

- 40 Tesla Superconducting magnet
- Beneficial to various fields of physics research
 - Extended run time
 - Lower noise levels

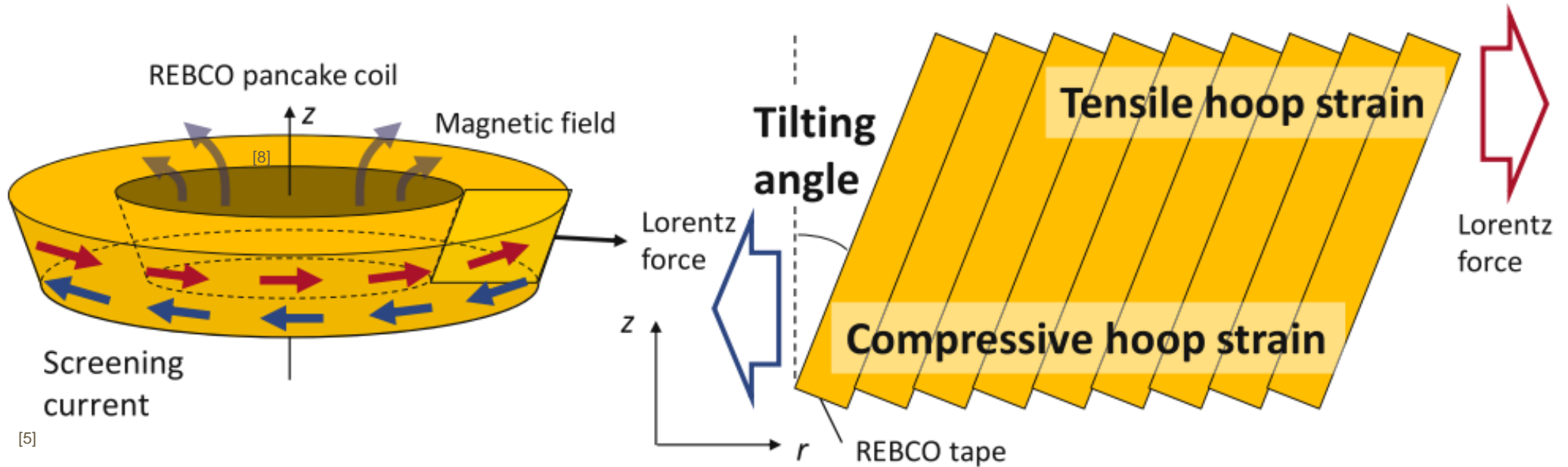
Superconducting tape^[3]



Test coil^[4]

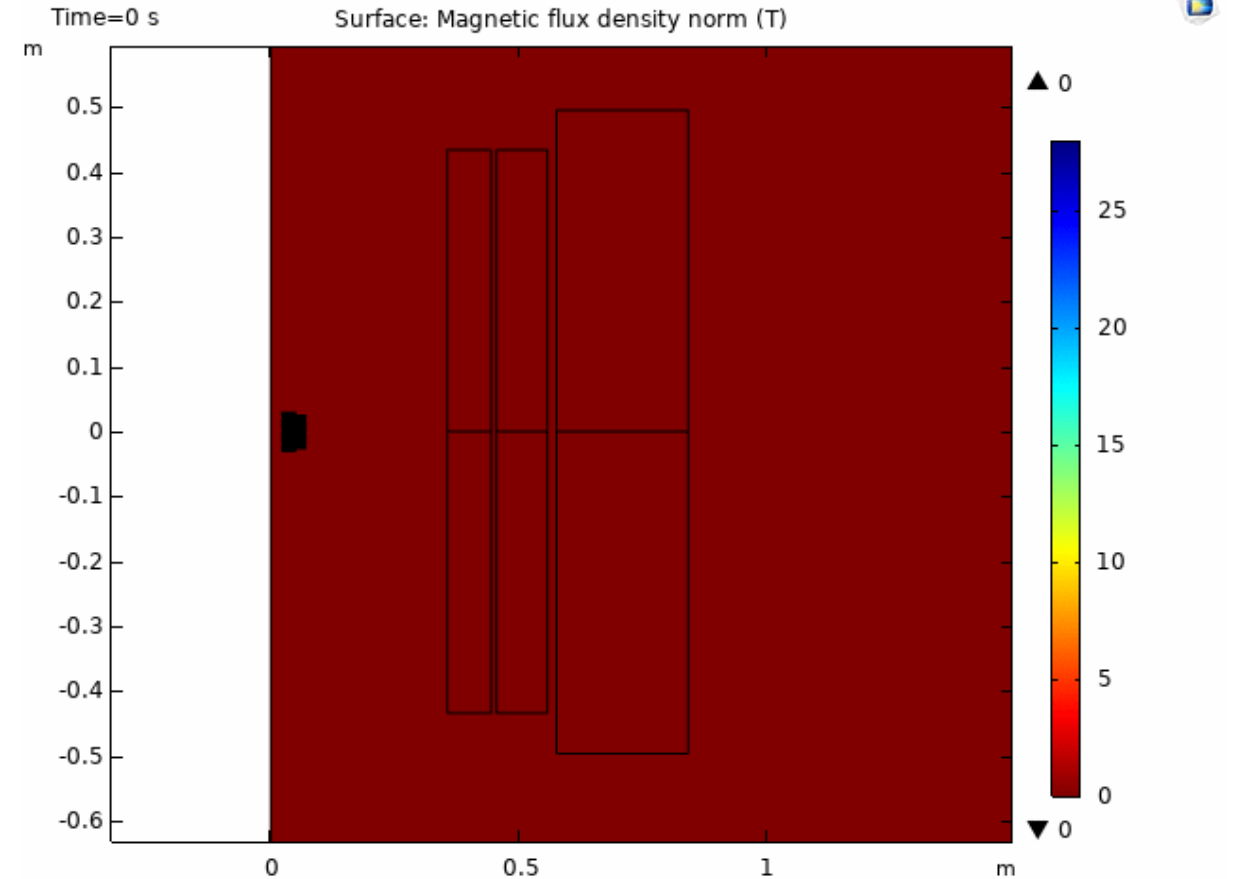
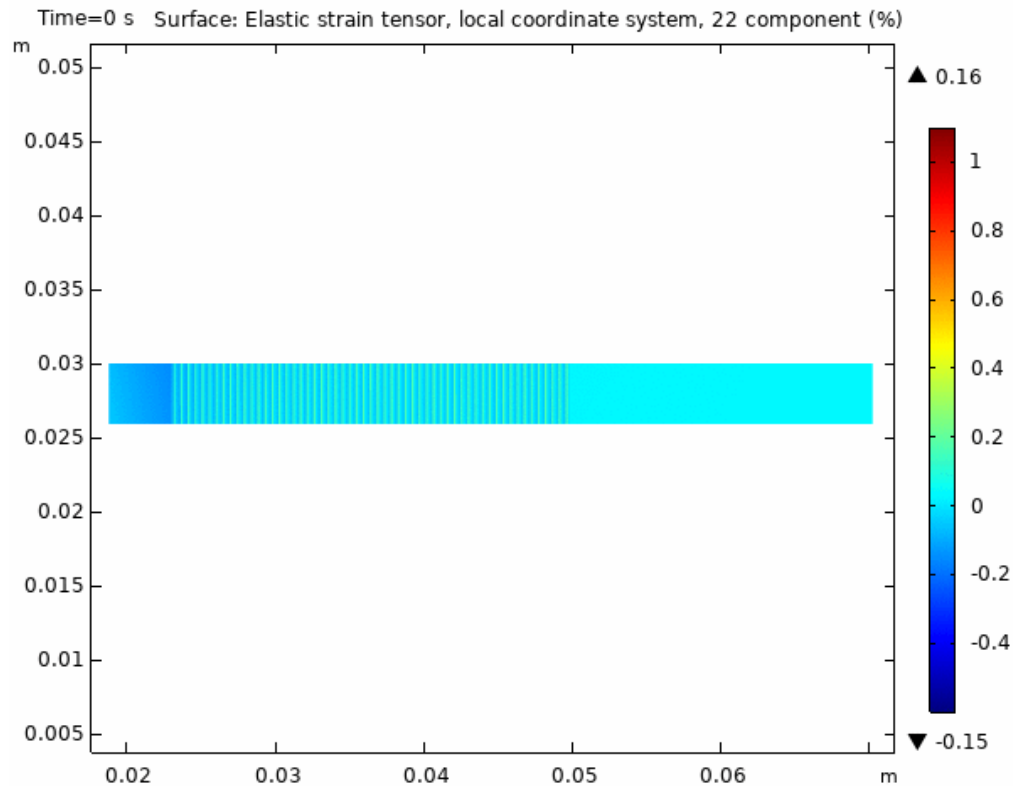
Strain in Superconductors

- Disks composed of tapes.
- High magnetic fields \rightarrow Lorentz forces
- Forces \rightarrow deformations of the superconducting tapes!



Numerical Analysis

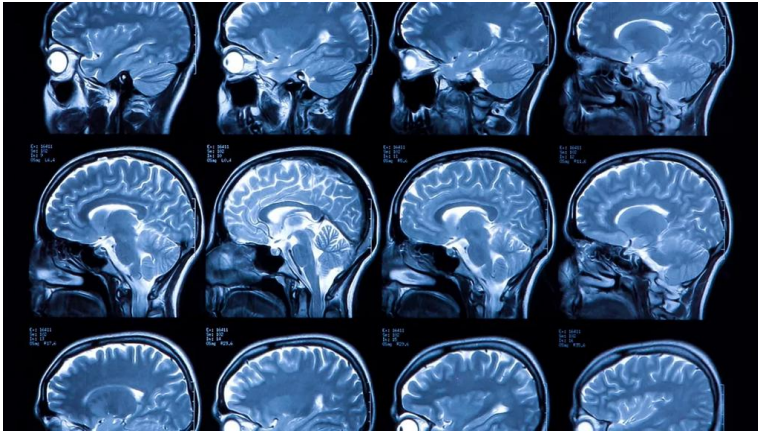
- Instrumental in the design process of superconducting magnets.



Test coil modeled using FLOSSS application

Implications to advancements in superconducting magnet design

Medical



[6]

Research



[7]

Clean Energy



[8]

THANK YOU!

Image citations

[1] https://www.researchgate.net/figure/Layout-of-the-CC-system-of-ITER-the-TF-coils-have-been-removed-from-the-view-for_fig2_233921924

[2] <https://nationalmaglab.org/news-events/news/lbc-project-world-record-magnetic-field>

[3] <https://nationalmaglab.org/magnet-development/magnet-projects/40-tesla-superconducting-magnet/>

[4] Bai, H., Abraimov, D. V., Boebinger, G. S., Bird, M. D., Cooley, L. D., Dixon, I. R., Kim, K. L., Larbalestier, D. C., Marshall, W. S., Trociewitz, U. P., & Weijers, H. W. (2020). The 40 T superconducting magnet project at the National High Magnetic Field Laboratory. *IEEE Transactions on Applied Superconductivity*, 30(4), 1–5. <https://doi.org/10.1109/tasc.2020.2969642>

[5] Suetomi, Y., Xu, P., Bosque, E. S., Gavrilin, A. V., Markiewicz, W. D., Bai, H., & Dixon, I. R. (2024). Screening current induced stress/strain analysis of High Field RebcO coils with co-winding or over-banding reinforcement. *IEEE Transactions on Applied Superconductivity*, 34(5), 1–6. <https://doi.org/10.1109/tasc.2023.3342762>

[6] <https://www.euronews.com/health/2021/07/23/potentially-life-saving-study-could-cut-labelling-times-for-mri-scans-from-years-to-minute>

[7] https://en.wikipedia.org/wiki/Particle_accelerator

[8] <https://psatellite.com/pss-advances-in-sc-motors-for-aircraft/>

Acknowledgements



Jing Wang
Dean and Professor
PhD, MPH, RN, FAAN



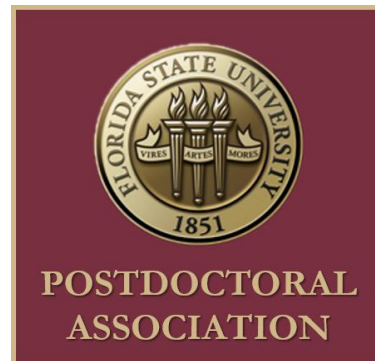
Hye Jin Park
Associate Professor
PhD, RN



Hongyu Miao
Professor, Director of Brain
Science & Symptom
Management Center
PhD



Dan Song
Postdoctoral Scholar
RN, PhD



Chengdong Li
Data Scientist



Buna Bhandari
Postdoctoral Scholar
MPH, PhD



Setor Kofi Sorkpor
Assistant Professor
PhD, MPH, MSN, RN



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PhD, MPH

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presentation!**

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10 – Yijiong Yang

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AWARDS & RECEPTION

**Please join us for refreshments
and award presentations**

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PROGRAM END

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