

WVU-led experiments contributing to the Frontier Science Experiments Campaign on DIII-D and LAPD

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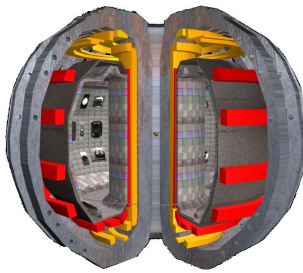
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DIII-D's Frontier Science Experiments (FSE) initiative explores the potential to use the DIII-D tokamak facility to investigate questions of value beyond DIII-D's usual fusion-energy science mission. The campaign is unique because the DIII-D tokamak supplied a multi-day-shot platform for non-fusion-energy-motivated research for the first time. All selected FSE campaign projects competed on the basis of potential intellectual impact and on the degree to which the ability to achieve success as a transformational advance relied on the capabilities of DIII-D. UCLA's FSE initiative at the Large Plasma Device (LAPD in the Basic Plasma Science Facility (BaPSF) also accommodates users investigating important FSE questions.

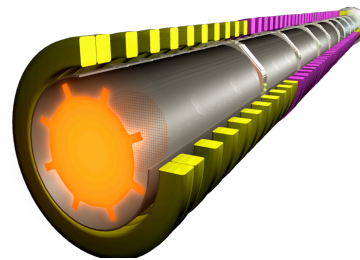
The motivation of the following FSE projects, as well as the selection process, will be summarized.

(DIII-D) Nonlinear Alfvén mode-mode interactions that influence wave and particle properties and energization,
(DIII-D) Electron transport across chaotically oriented magnetic-field lines,
(DIII-D) Modal vs. nonmodal approaches to decomposing turbulence and cross-field transport, and
(LAPD) Electromagnetic inhomogeneous-energy-density-driven (IEDD) instability.

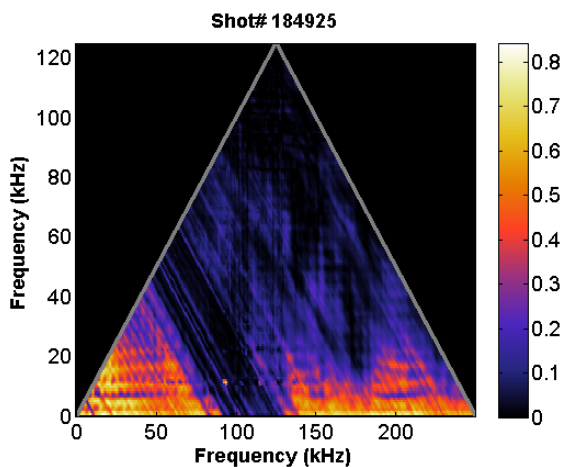
Collaboration with the DIII-D team is taking place in FY2021 and FY2022 on DIII-D and on LAPD. Results have been obtained and will be presented. Funding is from U.S. DOE. Collaboration with S. Nogami, G. Riggs, S. Bilgili, W. Heidbrink, M. Van Zeeland, G. Howes, F. Skiff, N. Crocker, S. Vincena, D. Spong, D. Orlov, T. Evans, K. Thome, G. DeGrandchamp, J. Sarff, and T. Carter is gratefully acknowledged.



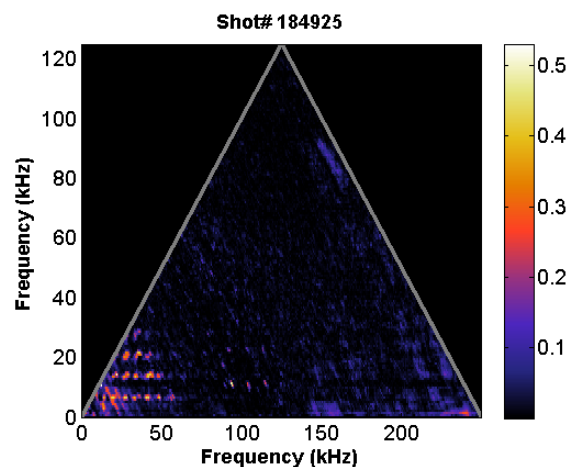
DIII-D
NATIONAL FUSION FACILITY
SAN DIEGO
Doublet III-D Tokamak



UCLA
Large Plasma Device (LAPD)



Bispectrum (DIII-D shot #184925) without post-shot ELM filter. Nonlinear wave coupling is masked by ELM.



Bispectrum (DIII-D shot #184925) with post-shot ELM filter. Nonlinear wave-wave coupling is revealed.