" The IFE-STAR RISE hub research efforts to advance inertial fusion "

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Engineering 100

Abstract

The remarkable demonstration of ignition at the National Ignition Facility Lawrence Livermore National Lab in Dec. 2022 has promoted intense research, in the public and private sectors, to advance the science and bridge technological gaps that will pave the way towards the implementation of inertial fusion as a sustainable energy source. In support of these efforts the Department of Energy created a new program, IFE-STAR that established three inertial fusion energy hubs with the goal to advance-collaborate-promote inertial fusion energy. The RISE hub led by Colorado State University (CSU) is one of them. The RISE hub is composed by a team of experts from academic institutions, US laboratories and industry. This talk will present the fundamentals of laser or inertial fusion and describe how the RISE hub research advances inertial fusion energy (IFE).

RISE hub research focuses on performing: 1) theoretical design of multiple IFE concepts, 2) experiments and theory to advance technologies enabling laser fusion drivers, 3) IFE target development and engagement, and 4) experimental validation of fusion concepts. In addition, the hub's research offers a platform for workforce development and for engaging in university-industry-national laboratory partnerships.

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Biography

Carmen S. Menoni is University Distinguished Professor in the Department of Electrical and Computer Engineering and serves as Director of the recently established Inertial Fusion Energy hub, RISE, supported by the DoE IFE STAR Program, Fusion Energy Science. Prof Menoni is the 2024 recipient of the Joseph Fraunhofer Award/Robert M. Burley Prize. She has also been awarded the IEEE Women in Photonics Excellence Award (2023) and the Willis Lamb Award for Laser Science and Quantum Optics (2024). Menoni is Fellow of Optica, the Institute of Electrical & Electronic Engineers (IEEE), the American Physical Society (APS), the American Association for the Advancement of Science (AAAS) and SPIE. Menoni has served the Optics and Photonics community through her participation in prominent editorial and governing boards. Menoni was President of the IEEE Photonics Society in 2020-2021. Menoni is co-founder and president of XUV Lasers, a spin-off from CSU that commercializes high power and XUV laser technologies.