CSU PHYSICS COLLOQUIUM

“Fusion Energy: Recent Developments and Physical Constraints ”
Scott Parker
University of Colorado, Boulder
Monday, February 20th at 4:00 PM
120 Engineering (Hammond Auditorium)

Abstract

Fusion energy is a promising technology for producing clean, limitless, zero-carbon energy. Recently, there has been a paradigm shift where today, privately funded research dominates over the historic government-funded fusion program. Private research and development have very short timelines, and some future milestones appear speculative. I will discuss plasma and nuclear physics constraints that experiments will face as they progress toward the fusion goal. I will start with an overview of fusion energy and briefly discuss the recent demonstration of a net gain in inertial confinement fusion at the National Ignition Facility. My focus will be magnetic confinement, the space where the most promising devices exist and where the most private equity is.

Biography

Scott Parker is a theoretical physicist with expertise in fusion energy science. He is a Fellow of the American Physical Society and has recently served on the DOE Fusion Energy Sciences Advisory Committee and the DIII-D National Fusion Facility Program Advisory Committee. Professor Parker’s research focuses on multiscale kinetic simulation methods and extreme scale computing applied tokamak edge turbulence and energy transport. Additionally, he is working on problems in quantum information science relevant to fusion plasma science, including the impact of quantum computing on nonlinear computational mathematics and direct numerical simulation of ultra-cold ion crystals. He received his Ph.D. in Engineering Science from the University of California, Berkeley and his B.S. in Nuclear Engineering and B.S. in Mathematics at the University of Wisconsin, Madison. He was a staff physicist at the DOE Princeton Plasma Physics Laboratory for six years.