



Ronald E. Hatcher
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Stellarators: Shedding new light on an old idea

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ABSTRACT: The stellarator is an old concept in magnetically confined nuclear fusion which has recently received new life through advanced computer modeling. In a stellarator the magnetic field which confines the plasma, composed of charged particles, is entirely generated by an external set of electromagnetic coils. The resulting configuration avoids many of the limiting instabilities found in high performance tokamaks at the added cost of design complexity. Advances in computational systems over the past 30 years have allowed stellarators to be optimized for performance nearing, and possibly exceeding, that of modern tokamaks. This talk will highlight the physics and history of stellarator experimentation and design including examples from past, current, and future devices. The talk will be geared toward a general audience with no explicit expertise needed, just an interest in physics and fusion.

BIOGRAPHY: Dr. Samuel Lazerson received his B.S in Engineering Physics from Embry-Riddle Aeronautical University in 2002 and his Ph.D. in Space Physics from the University of Alaska, Fairbanks in 2010. As a postdoctoral researcher at PPPL he worked on 3D equilibrium reconstruction for the Large Helical Device in Japan. His work was then applied to tokamaks (DIII-D, NSTX, and ITER) with applied 3D fields. He currently has the title as Stellarator Computational Physicist as a full researcher at PPPL, and is preparing for a year long research stay at the newly constructed W7-X stellarator in Germany. He will be joined by his loving, and adventurous, wife Meghan and daughter Samantha.