



DEPARTAMENTO DE FÍSICA

UNIVERSIDAD DE SANTIAGO DE CHILE

SEMINARIO ONLINE

**Lu 06
DICIEMBRE
11:00 Hrs.**

EN ROUTE TO A STELLARATOR FUSION REACTOR: RECENT RESULTS FROM WENDELSTEIN 7-X

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ABSTRACT

Wendelstein 7 (W7-X) is the name of a magnetic-confinement fusion facility. W7-X is a stellarator - a device that generates a helically shaped toroidal magnetic field in order to confine hot ionized gases. These plasmas generated in W7-X give access to fundamental science on hot matter and non-equilibrium systems. Prominent examples are the interplay of charged particles, turbulence and electromagnetic fields or the provision of conditions otherwise expected in space and stars. The investigation of hot plasmas in W7-X is most tempting to assess stellarator fusion as an unlimited, carbon-free energy source. W7-X is 'optimized' to minimize losses and detrimental effects from helical fields by intentionally shaping the coils. Operating since 2014 in Greifswald, the device allowed first tests of fundamental predictions: the precision required for magnetic fields was shown and the effect of the magnetic field structure on the toroidal, self-driven bootstrap current was revealed. Recent upgrades will allow achieving previously unprecedented pulse-lengths and performance figures to proceed swiftly with the integrated test of concept for stellarators fusion reactors.



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