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Investigating Plasma Flows in the Wendelstein 7-X Stellarator

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Abstract: Nuclear fusion has the potential to provide abundant, sustainable, and clean energy, but sustaining the high-performance plasmas required for fusion remains a major scientific and engineering challenge.

Stellarators - one of the approaches being pursued for achieving fusion energy - use complex, steady-state 3D magnetic fields to confine the plasma. The largest stellarator experiment, Wendelstein 7-X (W7-X), aims to demonstrate stellarator viability for power generation and has set records in combined stellarator performance and discharge duration.

This talk will present a background on fusion and stellarators, as well as x-ray diagnostics and their use in measuring plasma properties. Current research progress regarding expanding the capabilities of the x-ray imaging crystal spectrometer to consider both perpendicular and parallel plasma flows - which play an important role in confinement and transport - will be discussed, along with representative results from W7-X experiments.

Wednesday, February 4th | 2:00pm-3:15pm | Science Hall 126 & Zoom

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