

## **Analysis of MHD activity in Wendelstein 7-X stellarator**

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The Wendelstein 7-X stellarator (W7-X) in Greifswald has started its second experimental phase in October 2017. The installation of the uncooled divertor modules allowed for a higher energy limit as compared to the first experimental phase conducted in limiter configuration.

The magneto-hydrodynamic (MHD) diagnostic systems had been extended prior to the start of this second experimental phase and the Mirnov diagnostic and the X-ray tomography system have been put into operation. Performance-wise, long discharge lengths of up to 30 s have been achieved and a peak diamagnetic energy of 1 MJ has been measured.

In this specific high-performance experimental program, the density has been increased by means of pellet fueling during the first phase. In the second phase without pellet fueling, the temperature increased (input heating was kept constant) while the line-averaged density signal decreased; the measured diamagnetic energy was constant. The second phase was ended by MHD mode activity leading to an abrupt decrease in the stored energy by approx. 150 kJ.

Mirnov and X-ray diagnostics show an oscillatory pre-trigger prior to the crash.

These signatures resemble the observations obtained during ECCD current drive experiments, where the driven currents lead to similarly fast crashes. In this contribution we present the analysis of the crashes in these experiment programs.