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# TIME SERIES BASED INDICATORS FOR FUSION PLASMA DISRUPTIONS DETECTION

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A series of methods, based on the time series analysis of the main plasma diagnostic signals, are used to determine when significant changes in the plasma dynamics of the tokamak configuration occur, indicating the onset of drifts towards a disruption. Dynamical indicators, such as embedding dimension, 0-1 chaos test, recurrence plots measures, but also informational criteria, such as information impulse function quantifying information without entropy, have been tested to detect the time intervals when the plasma dynamics drifts towards situations that are likely to lead to disruptions. The methods allow a good estimation of the intervals, in which the anomalous behaviors manifest themselves, which is very useful for building significantly more appropriate training sets for various kinds of disruption predictors. As they are based on completely different mathematical principles, they are providing robust information about these intervals. Some of the developed methods may also be implemented themselves as stand-alone predictors for real time deployment.

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