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Guided radar for arc detection: new results SARA SALVADOR, RICCARDO MAGGIORA, Politecnico di Torino, Italy — The GUIded raDAR technonolgy has been recently proposed for the detection and localization of electric arcs in the transmission lines feeding antennas for plasma heating and current drive. The first experiments with real arcs were conducted on the MXP test-bed installed at IPP, Garching: results showed the capability of the GUIDAR system to detect both high voltage and low voltage arcs. For those experiments, the low frequency (25 MHz) GUIDAR signal was up-shifted to around 400MHz, injected in and extracted from the transmission line by mean of two directional couplers and then down-shifted to its original frequency before the elaboration performed on the DSP board. Another possibility is to use a septate coupler in place of the directional couplers, together with an up-shift/down-shift circuit, tuned accordingly to the behavior of the septate coupler, and a circulator for the transmission and extraction of the signal. A new test campaign, based on the described setup, is planned to start in September 2011 on DIII-D in collaboration with ORNL. The results, compared to the ones obtained at IPP, will allow to define which method (directional couplers or septate) is more efficient and to better understand which are the issues related to the localization of the arcs.

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