

Abstract Submitted  
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**UWB radar technique for arc detection in coaxial cables** SARA SALVADOR, RICCARDO MAGGIORA, Politecnico di Torino, Department of Electronics, Italy — UWB signals constituted by a sequence of chips (properly chosen to reduce side lobes and to improve detection accuracy) are transmitted along the transmission lines at a specified Pulse Repetition Frequency (PRF) and their echoes are received by means of directional couplers. The core of the receiver is an ultra high-speed correlator implemented in a Digital Signal Processor (DSP). When a target (arc) is detected, its position and its “radar cross section” are calculated to be able to provide the arc position along the transmission line and to be able to classify the type of detected arc. The “background scattering” is routinely extracted from the received signal at any pulse. This permits to be resilient to the background structure of transmission lines (bends, junctions, windows, etc.). Thanks to the localization feature, segmentation is also possible for creating sensed and non- sensed zones (for example, to be insensitive to antenna load variations). A complete test bed has been installed using standard coaxial cables (RG58) to demonstrate the system capabilities.

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