

# Selection of defective components in an unknown complex environment

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We shall present a new qualitative method capable of selecting defects in complex and unknown background from differential measures of farfield operators: i.e. measures of the farfield operator for the cases with and without defects. Indeed, the main difficulty is that the background physical properties are unknown. Our approach exploits the principle of the Generalized Linear Sampling method previously introduced by the authors as a rigorous alternative to so-called Linear Sampling Method and the link with solutions to the interior transmission problems. We shall present the theoretical foundations of the method and some validating numerical experiments. The motivation behind this work is the identification of cracks in concrete like materials. Simulations of such configurations will also be discussed.