

# STRUCTURE OF MUSIC ALGORITHM FOR IMAGING OF SMALL PERFECTLY CONDUCTING CRACKS IN LIMITED-VIEW INVERSE SCATTERING PROBLEM

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## ABSTRACT

Although standard Multiple Signal Classification (MUSIC) algorithm has shown promising non-iterative imaging technique of cracks, its application is limited to the full-view inverse scattering problems. Throughout many experimental results, it is confirmed that MUSIC can be applied to the imaging of cracks with small length and cannot be applied to the extended one in the limited-view problems. However, why these phenomena occur has not been theoretically investigated. Motivated by this well-known fact, the main purpose of this paper is to identify the structure of MUSIC-type algorithm that appears in the limited-view inverse scattering problems by establishing a relationship between MUSIC and Bessel functions of integer order of the first kind. Some numerical experiments are performed to support identified structure of MUSIC.

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