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Inclusion Detection in Laminar Media. Preliminary report.

We consider the problem of detecting if an object is present in a highly inhomogeneous medium. More specifically, we will analyze the following detection problem: based on measurements of signals propagated in the medium, and performed during two different periods of time, we want to determine whether the properties of the medium has changed or not. We adopt a statistical viewpoint by considering the medium to be a layered random medium, moreover, by assuming that there are errors associated with the data acquisition. Under these conditions we devise statistical detection functionals. (Received February 17, 2007)