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Determining microstructural features of a composite from effective properties ANTHONY DAY, ANDREW MCELROY, GREGORY SOWA, John Carroll University — The effective dielectric function of a composite depends on the microstructure of the composite as well as the dielectric function of the constituent materials. In the Bergman-Milton spectral representation, all of the information about the microstructure that is needed to determine the effective properties is contained in a spectral function which is independent of the material properties. We demonstrate a method for extracting the spectral function of the composite from measured reflectivity data using a continued fraction representation effective dielectric function. By using simulated data from a model system with a known spectral function we show that the method accurately reproduces the known spectral function. The method is fast, robust and only requires a fairly small number of fitting parameters which can be related to features of the microstructure.

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