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Todd Kapitula* (tmk5@calvin.edu), Department of Mathematics and Statistics, Calvin College, Grand Rapids, MI 49546. *Reformulating spectral problems with the Krein matrix.*

Successful resolution of spectral problems in Hamiltonian systems require that we locate not only the eigenvalues, but we also determine the Krein signature of those which are purely imaginary. The well-known Evans function determines the location and multiplicity of the eigenvalues, but in its classical form it does not allow a determination of the signature. On the other hand, the Krein matrix, and the accompanying Krein eigenvalues, allow us to not only find the eigenvalues, but the graphs can be used to determine the signature. We will briefly consider the construction of the matrix, and discuss its role in applications. (Received January 16, 2015)