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## The Ellis-Gohberg inverse problem for matrix-valued Wiener functions on the line

### Abstract

This talk deals with the Ellis-Gohberg inverse problem for matrix-valued Wiener functions on the line, instead of on the circle, as was done in [1] for scalar functions and in [2] for matrix-valued functions. Using elements of mathematical system theory, the problem is reduced to a linear finite matrix equation of which the right hand side is described explicitly in terms of one of the given functions. Necessary and sufficient conditions will be given in order that the problem is solvable and the solution is unique. The results obtained parallel and extend those derived in [2] for Wiener functions on the circle. Special attention is paid to the scalar case and to the case when the given functions are Fourier transforms of functions of finite support. The talk is based on joint work with Freek van Schagen.

### References

- [1] R. L. Ellis and I. Gohberg, Orthogonal systems related to infinite Hankel matrices, *J. Functional Analysis* **109** (1992), 155–198.
- [2] M.A. Kaashoek and F. van Schagen, The inverse problem for Ellis-Gohberg orthogonal matrix functions, *Integral Equ. Oper. Theory* **80** (2014), 527-555.

Talk time: 07/18/2016 2:30PM— 07/18/2016 2:50PM

Talk location: Cupples I Room 113

Special Session: State space methods in operator and function theory. Organized by J. Ball and S. ter Horst.