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11. Mathematical Physics

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Inverse spectral analysis for first order systems
Different kinds of inverse spectral problems for first order systems

$$-iB \otimes \frac{dy}{dx} + Q(x)y = \lambda y, \quad y = col(y_1, ..., y_n) \tag{1}$$

on a finite segment and semiaxis are considered. Borg type problems as well as inverse problems with partial information on the potential matrix Q are investigated.
A solution to the inverse spectral problem for systems (1) on the half line is also provided. Namely, necessary and sufficient conditions for a matrix measure to be a spectral function of a self-abjoint boundary value problem for a system (1) on $L_2[0,\infty)$ will be presented.
Part of these results is joint work with J. Brüning and M. Lesch.