

# Spectral Theory and Applications

## On Kotani's program

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We were inspired by a program of Shinichi Kotani presented in his several papers and talks (e.g. a mini course of lectures at CRM, 2011). He was focused on the idea to construct KdV flow on a space of continuum Schrödinger operators with reflectionless potentials, which form the so-called Marchenko class, by applying Sato's Grassmanian approach. Particularly his aim was to clarify which of these potentials are almost periodic. Jointly with A. Volberg and D. Damanik we found a quite comprehensive theory for such operators with absolutely continuous spectrum (in a generic position). It is based on and actually develops the Widom theory of Hardy spaces in multi-connected domains. The main part of the talk deals with a presentation of this theory. Besides that, we are going to discuss some related results in the function theory in multi-connected domains and some open problems.

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