Existence of a tree of Stieltjes strings corresponding to given spectra of Dirichlet and Neumann problems

V. Pivovarchik

Transversal vibrations of a plane tree of Stieltjes strings rooted at an interior vertex is considered with Dirichlet boundary conditions at each pendant vertex. Continuity and Kirchhoff conditions are imposed at each interior vertex except of the root. Dirichlet problem is the one with Dirichlet conditions at the root and Neumann problem is the one with continuity and Kirchhoff conditions at the root. It is shown that strict interlacing is a sufficient condition for two sequences of real numbers to be the spectra of Neumann and Dirichlet problems generated by Stieltjes string recurrent relations on any prescribed tree. The corresponding necessary conditions are compared with the obtained sufficient strict interlacing conditions.

The talk is based mainly on results in [V. Pivovarchik, Existence of a tree of Stieltjes strings corresponding to two given spectra. J. Phys. A: Math. Theor. **42** (2009) no. 37, 375213].