

# Jacobi matrices and non-equilibrium statistical mechanics

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**Abstract:** We consider XY chain with Hamiltonian

$$\frac{1}{2} \sum_{x \in \mathbb{Z}} J_x \left( \sigma_x^{(1)} \sigma_{x+1}^{(1)} + \sigma_x^{(2)} \sigma_{x+1}^{(2)} \right) + \lambda_x \sigma_x^{(3)}$$

where initially the left ( $x < 0$ )/right ( $x > 0$ ) part of the chain is in thermal equilibrium at inverse temperature  $\beta_l/\beta_r$ . The temperature differential results in a non-trivial energy/entropy flux across the chain. In this talk I will describe the link between non-equilibrium characteristics of this model and scattering properties of the Jacobi matrix  $hu_x = J_x u_{x+1} + \lambda_x u_x + J_{x-1} u_{x-1}$  canonically associated to the XY chain.

This talk is based on a joint work with B. Landon and C-A. Pillet.