

Exact mass-coupling relation of the simplest multi-scale quantum integrable model

Gabor Zsolt Toth

Wigner Research Centre for Physics
Konkoly-Thege Miklos ut 29-33
Budapest, Hungary

Joint work with: Zoltan Bajnok, Janos Balog, Katsushi Ito, Yuji Satoh

We derive the exact mass-coupling relation of the $su(3)_2/u(1)^2$ homogeneous sine-Gordon model. The relation is obtained by comparing the perturbed conformal field theory description of the model valid at short distances to the large distance bootstrap description based on the model's integrability. In particular, we find a differential equation for the relation by constructing conserved tensor currents which satisfy a generalization of the Theta sum rule Ward identity. The mass-coupling relation is written in terms of hypergeometric functions.