

FUNCTIONAL INTEGRAL REPRESENTATION FOR THE S-MATRIX IN INTEGRABLE 2D CONFORMAL FIELD THEORIES

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We study semiclassical scattering in Liouville theory, in $SL(2, \mathbb{R})/U(1)$ WZW theory and in $SL(3, \mathbb{R})$ Toda theory, using the relations between the in and out fields defined by the chiral currents of these theories. By these relations we investigate the generating functional F that corresponds to the semiclassical S-matrix. In particular, we construct the Legendre transform of F in a closed form. The construction scheme is similar for these three theories and the obtained functionals have a compact form. This provides a basis for the functional integral representation of the S-matrix in these theories, which earlier was known only for Liouville theory.

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