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Generalized T-Q relations and the open spin-s XXZ chain with nondiagonal boundary terms

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We consider the open spin-s XXZ quantum spin chain with nondiagonal boundary terms. By exploiting certain functional relations at roots of unity, we derive a generalized form of T-Q relation involving more than one independent Q(u), which we use to propose the Bethe-ansatz-type expressions for the eigenvalues of the transfer matrix. At most two of the boundary parameters are set to be arbitrary and the bulk anisotropy parameter has values $\eta = i\pi/2$, $i\pi/4$,... We also provide numerical evidence for the completeness of the Bethe-ansatz-type solutions derived, using $s = 1$ case as an example.

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