On the reality of spectra of $U_q(sl_2)$-invariant XXZ Hamiltonians

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Many two-dimensional lattice models of statistical physics are formulated using a special element of the Temperley-Lieb algebra $TL_n(\beta)$. Then the integer $n$ labels the number of sites on lines of the lattice and $\beta$ parametrizes the model itself. Physically the spectrum of this element, the Hamiltonian, should be real. Mathematically, this requirement states that, in all physically relevant representations, the element should be self-adjoint with respect to some positive-definite bilinear form. I shall display such a bilinear form for the $U_q(sl_2)$-invariant XXZ Hamiltonian that is central to many physical investigations.

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