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On the representation theory of matrix quantum groups of type A

We study representations of quantum groups defined in terms of solutions of the Yang-Baxter equation which also satisfies the Hecke equation $(x+1)(x-q) = 0$. Typical examples of such solutions are the Drinfeld-Jimbo solutions of series A , which define the well-known quantum group $GL_q(n)$, and their super analog found by Manin, which determine the quantum super groups $GL_q(m|n)$. The representation theory of these particular quantum groups have been studied by many authors. The main result in the case q is not a root of unity essentially says that the representation categories them do not differ so much from those of the corresponding groups, i.e., of $GL(n)$ or $GL(m|n)$. Given an arbitrary solution of the Yang-Baxter equation and the Hecke equation with the parameter q being not a root of unity, we show that the representation category of the associated quantum group is equivalent as an abelian braided monoidal category to the representation category of a quantum super group $GL_q(m|n)$ mentioned above, where the pair (m, n) is uniquely defined and can be constructively computed from the given solution. In particular we can classify all simple representations.