

MASSES OF DECUPLET BARYONS TREATED
WITHIN ANYONIC REALIZATION
OF THE q -ALGEBRAS $U_q(\mathfrak{su}_N)$

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In the approach to hadronic flavour symmetries based on the q -algebras $U_q(\mathfrak{su}_N)$ and proved to be realistic, the known construction of $U_q(\mathfrak{su}_N)$ in terms of anyonic oscillators residing on a $2d$ lattice is utilized. Anyonic Fock-like realization of basis state vectors is given for baryons $(3/2)^+$ from the **10**-plet of $U_q(\mathfrak{su}_3)$ embedded, via a **20**-plet of $U_q(\mathfrak{su}_4)$, into the 'dynamical' representation [4000] of $U_q(\mathfrak{su}_5)$. Within the anyonic picture, we reobtain the universal q -deformed decuplet mass relation $M_\Omega - M_{\Xi^*} + M_{\Sigma^*} - M_\Delta = [2]_q(M_{\Xi^*} - M_{\Sigma^*})$, where $[2]_q = q + q^{-1} = 2 \cos \theta$. Consistency with data on baryon masses requires $\theta \simeq \frac{\pi}{14}$. As a result, anyons with anyonic statistics parameter $\nu = \frac{1}{14}$ can be put into correspondence, at least formally, with the constituent quarks of decuplet baryons.