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L^p-martingales on q-white noises

A q-white noise is the von Neumann algebra generated by q-Brownian motion on q-Fock space. In the case $-1 < q < 1$ we characterize bounded L^p-martingales ($1 < p < \infty$) w.r.t a canonical filtration as non-commutative Hardy spaces. This result generalizes work of Pisier and Xu on Itô-Clifford martingales which correspond to the case $q = -1$.