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THE MAXIMAL $\mathcal{J}$-REGULAR PART OF A q-VARIATE WEAKLY STATIONARY PROCESS

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Abstract: Let x be a q-variate (weakly) stationary process over a locally compact Abelian group $\mathbf{G}$, and $\mathcal{J}$ a family of subsets of $\mathbf{G}$ invariant under translation. We show that the set of all regular non-negative Hermitian matrix-valued measures $\mathbf{M}$ not exceeding the (non-stochastic) spectral measure of x and such that the Hilbert space $L^2(M)$ is $\mathcal{J}$-regular contains a unique maximal element. Moreover, this maximal element coincides with the spectral measure of the $\mathcal{J}$-regular part of the Wold decomposition of x.

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