# Duality theorems for shift-invariant systems and Green's imprimitivity theorem

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Abstract:

Gabor frames for separable lattices may be linked to shift-invariant spaces via the Ron-Shen matrices and this is central in the work of Groechenig and Stoeckler on Gabor frames generated by totally positive functions.

We show that the Ron-Shen matrices of a Gabor frame are a consequence of Mackey's imprimitivity theorem due to Green, and in this way reveal the representation theoretic reason behind the link between separable Gabor frames and shift-invariant systems.

Furthermore, Green's theorem gives a duality theorem for shift-invariant systems associated with lattices in locally compact groups, that we briefly discuss as well as some open problems.