# TRANSFERRING FOURIER MULTIPLIERS

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## 1. FOURIER MULTIPLIERS OF $L^p(G)$

Let $G$ be a compact Lie group, and $\hat{G}$ is dual (a maximal set of irreducible representations of $G$ ). The Fourier transform of $f \in L^1(G)$ associates to $\sigma \in \hat{G}$ , the $d_\sigma \times d_\sigma$ matrix $\int_G f(x)\, \sigma(x^{-1})\, dx$ (where $d_\sigma$ is the dimension of the space in which $\sigma$ acts).

The Fourier multipliers of $L^p(G)$ are sequences $(A_\sigma)$ of matrices so that if $(\hat{f}(\sigma))$ is the Fourier series of an $L^p$ function, so is $(A_\sigma \hat{f}(\sigma))$.

**Example.** If $G = SU(2)$ , $\hat{G} \equiv \{0,\frac{1}{2},1,\ldots\}$ and if $\ell \in \hat{G}$ , $\sigma_\ell$ has dimension $2\ell+1$ , and we look for sequences $A_0, A_{\frac{1}{2}}, \ldots$ , where $A_\ell$ is a $(2\ell+1) \times (2\ell+1)$ matrix.

## 2. EXAMPLES OF MULTIPLIERS

(i) Central multipliers. We restrict to $A_\sigma = c_\sigma I$ for $c_\sigma \in \mathbb{C}$ . This is the case which has been most studied. For example, Bonami and Clere [1] and Clere [2] have shown that the

Poisson kernel $e^{-\sqrt{\frac{\ell}{R}}} I_{\sigma_\ell}$

Gauss kernel $e^{-\frac{\ell}{R}} I_{\sigma_\ell}$

Riesz kernel $\left(1 - \frac{\ell}{R}\right)^\delta + I_{\sigma_\ell}$ $(\delta > 1)$

are bounded summability kernels in $L^p(SU(2))$ . These results also