

Equiconvergence theorems for Chébli-Trimèche hypergroups

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Abstract. We consider a Sturm-Liouville operator of the kind $\frac{d^2}{dt^2} + \frac{A'(t)}{A(t)} \frac{d}{dt}$ on $(0, +\infty)$ and the related eigenfunction expansion. We prove that, under suitable assumptions on $A(t)$, the partial sums of the Fourier integral associated to such expansion behave like the partial sums of the classical Fourier-Bessel transform. This implies an almost everywhere convergence result for $L^p(A(t) dt)$ functions. Our methods rely on asymptotic expansions for the eigenfunctions and the Harish-Chandra function that we prove under very weak hypotheses.

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