Lipschitz conditions for the discrete Fourier-Laplace transform associated with the Laplace-Beltrami operator on the sphere

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Our aim in this talk is to prove an analog of the classical Titchmarsh theorem on the image under the discrete Fourier-Laplace transform of a set of functions satisfying a generalized Lipschitz condition in the space L_p, $1 < p \leq 2$ on the sphere. More precisely, we give a Lipschitz-type condition on f in $L_p(\sigma^{m-1})$ for which its Fourier-Laplace series belongs to l^β for some values of β, where σ^{m-1} be the unit sphere in the space $\mathbb{R}^m$, $m \geq 3$. In the particular case, when $p = 2$, we provide equivalence theorem: we get a characterization of the space $Lip(\gamma, 2)$ of Lipschitz class functions by means of asymptotic estimate growth of the norm of their Fourier-Laplace series for $0 < \gamma < 1$. Furthermore, we introduce Laplace-Dini-Lipschitz class $LDLip(\gamma, \delta, p)$ and we obtain analogous of Titchmarsh's theorems in this occurence.