

# Central Limit Theorems for Poisson Random Waves

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We introduce a model of Poisson random waves in  $S^2$  and we study Quantitative Central Limit Theorems when both the rate of the Poisson process and the frequency of the waves (eigenfunctions) diverge to infinity. We consider finite-dimensional distributions, harmonic coefficients and convergence in law in functional spaces, and we investigate carefully the interplay between the rate of divergence of eigenvalues and Poisson governing measures. The results were obtained exploiting Stein-Malliavin techniques on the Poisson space for the univariate and the multivariate case.

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