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# Approximation of continuous functions by de la Vallée-Poussin means of Fourier series on hexagonal domains

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## Abstract

For a Hölder continuous function  $f$ , periodic with respect to the hexagon lattice, deviations of generalized de la Vallée-Poussin means  $\mathcal{V}_n^\lambda(f)$  and classical de la Vallée-Poussin means  $\mathcal{V}_{2n}^n(f)$  of its hexagonal Fourier series from  $f$  are estimated in uniform and Hölder norms.

**Keywords:** generalized de la Vallée-Poussin means, hexagonal Fourier series, Hölder space.

**MSC:** 41A25, 42A10, 42B08.

## §1. Introduction

Approximation theory of  $2\pi$ -periodic functions on the real line is mostly based on trigonometric (or exponential) Fourier series of functions. Specially, Cesàro, Abel-Poisson, de la Vallée-Poussin and other means of Fourier series are useful tools for studying approximation properties of periodic functions. Approximation properties of means of trigonometric Fourier series in  $C_{2\pi}$  (the space of  $2\pi$ -periodic continuous functions) and in  $L_{2\pi}^p$  spaces have been studied by many authors. There are many excellent monographs that contain results of these studies (see, for example, [17, 15, 5]). Also, the survey

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