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ERROR BOUNDS OF AN ABSOLUTELY CONTINUOUS FUNCTIONS BY ORTHOGONAL PROJECTION OPERATOR USING EXTENDED PSEUDO-CHEBYSHEV WAVELET SERIES

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Abstract: This paper introduces a novel computational strategy devised to address the challenges encountered in approximation theory. The strategy revolves around the utilization of extended pseudo-Chebyshev wavelet approximations, a concept pioneered by Lal et al. in 2022, which is grounded in the method of pseudo-Chebyshev wavelets approximation. The paper meticulously delineates the methodology, along with an evaluation of error for a specific function. To showcase the efficacy and efficiency of the extended pseudo-Chebyshev wavelet approximation approach, significant discoveries are exemplified through a practical instance. Furthermore, the paper establishes the error of a function associated with the class of absolutely continuous functions using extended pseudo-Chebyshev wavelets via orthogonal projection operators, thereby affirming these estimators as notably more precise and theoretically optimal within the domain of wavelet analysis.

Keywords and Phrases: Absolute Continuity, Wavelets, Extended pseudo Chebyshev wavelets, Orthogonal projection operators.

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