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## A Generalized Translation Operator Generated by the Sinc Function on an Interval

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Abstract—We discuss the properties of the generalized translation operator generated by the system of functions  $\mathfrak{S} = \{(\sin k\pi x)/(k\pi x)\}_{k=1}^{\infty}$  in the spaces  $L^q = L^q((0,1), v), q \ge 1$ , on the interval (0,1) with the weight  $v(x) = x^2$ . We find an integral representation of this operator and study its norm in the spaces  $L^q$ ,  $1 \le q \le \infty$ . The translation operator is applied to the study of Nikol'skii's inequality between the uniform norm and the  $L^q$ -norm of polynomials in the system  $\mathfrak{S}$ .

Keywords: generalized translation, sinc function, inequality of different metrics.

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