

**New classes of the index transforms and their applications to  
solutions of higher order PDE's**

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**Abstract**

We discuss new index transforms, which are associated with the modified Bessel functions as the kernel. The boundedness and invertibility are examined for these operators in the Lebesgue weighted spaces. Inversion theorems are proved. Important particular cases are exhibited. The results are applied to solve initial value problems for higher order PDE, involving the Laplacian.