

**INVERSION OF THE RIESZ POTENTIAL OPERATOR
ON LEBESGUE SPACES WITH VARIABLE EXPONENT**

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Abstract

The Riesz potentials were recently studied on the Lebesgue spaces $L_{p(\cdot)}(\mathbb{R}^n)$ of variable exponent, leading to the generalization of some Sobolev-type theorems. We deal with the inversion problem of the Riesz potential operator within the context of such spaces. It is shown that the left inverse operator to the Riesz potential operator has the form of a hypersingular operator (known also as the Riesz fractional derivative) under natural smoothness conditions on the exponent $p(\cdot)$.

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