

Ryskul Oinarov

L.N.Gumilyov Eurasian National University, Astana, Kazakhstan

Boundedness and Compactness of the integral operators in weighted Sobolev space

Let $I = (a, b) \subseteq \mathbb{R}$. Let $1 < p, q, r < \infty$. Suppose that v and u are positive and measurable functions on I . We denote by $W_{p,r}^1(u, v)$ the set of locally absolutely continuous functions f on I with following finite norm

$$\|f\|_{W_{p,r}^1} = \|uf'\|_r + \|vf\|_p. \quad (1)$$

Let $\mathring{AC}(I)$ be the set of locally absolutely continuous functions with compact supports on I . Denote by $\mathring{W}_p^1(u, v)$ the closure of the set $\mathring{AC}(I) \cap W_p^1(u, v)$ with respect to the norm (1).

We consider the problem of boundedness and compactness from the weighted Sobolev $\mathring{W}_{pp}^1(u, v)$ space into the weighted Sobolev $W_{p,r}^1(u, v)$ space of the integral operator $Kf(x) = \int_a^x K(x, t)f(t)dt$, $x \in (a, b)$, under some assumptions on the kernel $K(x, t) \geq 0$. This is joint work with Aigerim Kalybai (Astana).

References

- [O1] Oinarov, R., *Boundedness of integral operators from weighted Sobolev space to weighted Lebesgue space*, Complex Variables and Elliptic Equations., **56**, 1021-1038 (2011).
- [O2] Oinarov, R., *Boundedness of integral operators in weighted Sobolev spaces*, Izvestiya RAN: Ser. Mat., **78**, 207-223 (2014).