

## Trace theorems for Sobolev-Slobodeckij spaces with or without weights

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**Abstract.** We prove that the well-known trace theorem for weighted Sobolev spaces holds true under minimal regularity assumptions on the domain. Using this result, we prove the existence of a bounded linear right inverse of the trace operator for Sobolev-Slobodeckij spaces  $W_p^s(\Omega)$  when  $s - 1/p$  is an integer.

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### 1. Introduction

The aim of this paper is to prove trace theorems for weighted Sobolev spaces  $W_{p,r}^k(\Omega)$  and Sobolev-Slobodeckij spaces  $W_p^s(\Omega)$  (without weights) under the weakest boundary regularity conditions – the minimal regularity assumptions on the boundary under which functions on the boundary are well defined. The weighted Sobolev spaces we consider in this paper are of the form (see [13])

$$W_{p,r}^k(\Omega) = \left\{ u : u, \rho(x)^{r/p} D^\alpha u \in L_p(\Omega) \quad \forall \alpha : |\alpha| = k \right\},$$

where  $r \in \mathbb{R}$ ,  $k = 1, 2, \dots$ , and  $\rho(x)$  is the distance from  $x$  to the boundary of  $\Omega$ .