

Extension theorem for nonlocal operators

Katarzyna Pietruska-Pałuba
University of Warsaw

The talk is based on the paper:

Krzysztof Bogdan, Tomasz Grzywny, Katarzyna Pietruska-Pałuba, Artur Rutkowski, *Extension theorem for nonlocal operators*, arXiv:1710.05880

We are concerned with the probabilistic method of solving the Dirichlet problem in a domain $D \subset \mathbb{R}^d$ for a nonlocal (Lévy) operator with external boundary data g . The weak solution is given by the harmonic extension of g . We establish a Hardy-Stein-type identity between a weighted Sobolev semi-norm of g and another weighted Sobolev semi-norm of the harmonic extension.