Adams' trace principle on Morrey-type spaces over β-Hausdorff dimensional surfaces

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Abstract. In this talk we strengthen to Morrey-Lorentz spaces the Sobolev-trace principle discovered by D. R. Adams and extended to another functions spaces by Adams, Xiao and Liu. More precisely, we show that Riesz potential I_α mapping

$$I_\alpha : \mathcal{M}^{\lambda}_{pl}(\mathbb{R}^n, d\nu) \longrightarrow \mathcal{M}^{\lambda_\star}_{qs}(\Omega,\, d\mu),$$

continuously if and only if the Radon measure μ satisfies $\mu(B_r(x)) \lesssim r^\beta$ for every $x \in \operatorname{supp}(\mu) \subset \Omega$ and $r > 0$, provided $n - \alpha p < \beta \leq n,\ \alpha = \frac{n}{\lambda} - \frac{\beta}{\lambda_*}$ and $\frac{\lambda_*}{q} \leq \frac{\lambda}{p}$. The brand-new is if $\mu(B_r(x)) \lesssim r^{k/2}$ over smooth surfaces Ω with k non-vanishing principal curvatures at each $x \in \operatorname{supp}(\mu)$, then tracing principle applies.

References

[1] D. R. Adams, Traces of potentials arising from translation invariant operators, Ann. Scuola Norm. Sup. Pisa (3) **25** (1971), 203–217.

[2] L. Liu and J. Xiao, Restricting Riesz-Morrey-Hardy potentials, J. Differential Equations **262** (2017), no. 11, 5468–5496.