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Erratum to "L^p measure of growth and higher order Hardy–Sobolev–Morrey inequalities on $\mathbb{R}^N$"

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In the proof of part (i) of Theorem 3.2 of [**1**], the argument for the existence of a sequence $r_n \to \infty$ such that $\lim ||u(r_n, \cdot) - \overline{u}(r_n)||_{p, \mathbb{S}^{N-1}} = 0$ must be slightly modified. Indeed, $\nabla_{\mathbb{S}^{N-1}} u(r, \sigma)$ is not the orthogonal projection of $\nabla u(r, \sigma)$ on the tangent space $\{\sigma\}^\perp$ to $\mathbb{S}^{N-1}$ at σ, but r times this projection. To account for the omitted factor r, the left-hand side of the inequality

$$\int_0^\infty (1+r)^{-sp-N} r^{N-1} ||u(r,\cdot) - \overline{u}(r)||^p_{p, \mathbb{S}^{N-1}} dr \leq C|| \, |\nabla u| \, ||^p_{L^p_s},$$

must be replaced with $\int_0^\infty (1+r)^{-sp-N} r^{N-1-p} ||u(r,\cdot) - \overline{u}(r)||^p_{p, \mathbb{S}^{N-1}} dr$. Since $s < -1$ is assumed, the function $(1+r)^{-sp-N} r^{N-1-p}$ (equivalent to $r^{-(s+1)p-1}$ for large r) is not integrable at infinity, which suffices to ensure the existence of the sequence r_n.

References

[1] P. J. Rabier, L^p measure of growth and higher order Hardy–Sobolev–Morrey inequalities on $\mathbb{R}^N$, J. Math. Soc. Japan, **69** (2017), 127–151.

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