Ranjbar-Motlagh, Alireza

**Poincaré inequality for abstract spaces.** (English) Zbl 1121.26016

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Let $(X, d, \mu)$ be a locally strongly doubling metric-measure space. Let $g$ be an (extended) upper gradient for a measurable function $u$ on $X$. Then

$$\fint_{B(a,R)}\fint_{B(a,R)} |u(x)-u(y)|\,d\mu(x)\,d\mu(y) \leq MR \fint_{B(a,3R)} g(z)\,dz,$$

where $a \in X$, $R > 0$, $M = M_R$ is a suitable constant and $B(a,r)$ stands for the closed ball of radius $r > 0$ centred at $a$. The author provides examples of spaces which are locally strongly doubling metric-measure spaces.

Reviewer: Bohumír Opic (Praha)

**MSC:**

26D10 Inequalities involving derivatives and differential and integral operators

46E35 Sobolev spaces and other spaces of "smooth" functions, embedding theorems, trace theorems

46E30 Spaces of measurable functions ($L^p$-spaces, Orlicz spaces, Köthe function spaces, Lorentz spaces, rearrangement invariant spaces, ideal spaces, etc.)



**Keywords:**

metric-measure spaces; strong version of the doubling condition

**Full Text:** DOI

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