

MR2133404 (2006b:26016) 26D10 (26D15 46E30 46E35 53C23)

Ranjbar-Motlagh, Alireza (IR-SHAR)

Poincaré inequality for abstract spaces. (English summary)

Bull. Austral. Math. Soc. **71** (2005), no. 2, 193–204.

Summary: “The Poincaré inequality is generalised to metric-measure spaces which support a strong version of the doubling condition. This generalises the Poincaré inequality for manifolds whose Ricci curvature is bounded from below and metric-measure spaces which satisfy the measure contraction property.”

Reviewed by *Alberto Fiorenza*

References

1. J.P. Aubin and A. Cellina, *Differential inclusions*, Die Grundlehren der mathematischen Wissenschaften **264** (Springer-Verlag, New York, 1984). [MR0755330 \(85j:49010\)](#)
2. M. Bourdon and H. Pajot, ‘Poincaré inequalities and quasiconformal structure on the boundary of some hyperbolic buildings’, *Proc. Amer. Math. Soc.* **127** (1999), 2315–2324. [MR1610912 \(99j:30024\)](#)
3. P. Buser, ‘A note on the isoperimetric constant’, *Ann. Sci. École Nor. Sup.* **15** (1982), 213–230. [MR0683635 \(84e:58076\)](#)
4. I. Chavel, *Riemannian geometry - A modern introduction* (Cambridge Univ. Press, Cambridge, 1993). [MR1271141 \(95j:53001\)](#)
5. J. Cheeger, ‘Differentiability of Lipschitz functions on metric measure spaces’, *Geom. Funct. Anal.* **9** (1999), 428–517. [MR1708448 \(2000g:53043\)](#)
6. R. Coifman and G. Weiss, ‘Extensions of Hardy spaces and their use in analysis’, *Bull. Amer. Math. Soc.* **83** (1977), 569–645. [MR0447954 \(56 #6264\)](#)
7. L.C. Evans and R.F. Gariepy, *Measure theory and fine properties of functions*, Studies in Adv. Math. (CRC Press, Boca Raton, Florida, 1992). [MR1158660 \(93f:28001\)](#)
8. N. Garofalo and D.-M. Nhieu, ‘Isoperimetric and Sobolev inequalities for Carnot-Carathéodory spaces and existence of minimal surfaces’, *Comm. Pure Appl. Math.* **49** (1996), 1081–1144. [MR1404326 \(97i:58032\)](#)
9. B. Hanson and J. Heinonen, ‘An n -dimensional space that admits a Poincaré inequality but has no manifold points’, *Proc. Amer. Math. Soc.* **128** (2000), 3379–3390. [MR1690990 \(2001e:43004\)](#)
10. P. Hajłasz and P. Koskela, ‘Sobolev meets Poincaré’, *C. R. Acad. Sci. Paris Ser. I Math.* **320** (1995), 1211–1215. [MR1336257 \(96f:46062\)](#)
11. P. Hajłasz and P. Koskela, ‘Sobolev Met Poincaré’, *Mem. Amer. Math. Soc.* **145** (2000). [MR1683160 \(2000j:46063\)](#)
12. J. Heinonen, *Lectures on analysis on metric spaces* (Springer-Verlag, New York, 2001). [MR1800917 \(2002c:30028\)](#)

13. J. Heinonen and P. Koskela, ‘Quasiconformal maps in metric spaces with controlled geometry’, *Acta Math.* **181** (1998), 1–61. [MR1654771 \(99j:30025\)](#)
14. N. Korevaar and R. Schoen, ‘Global existence theorems for harmonic maps to non-locally compact spaces’, *Comm. Anal. Geom.* **5** (1997), 333–387. [MR1483983 \(99b:58061\)](#)
15. K. Kuwae and T. Shioya, ‘On generalized measure contraction property and energy functionals over Lipschitz maps’, *Potential Anal.* **15** (2001), 105–121. [MR1838897 \(2002f:31022\)](#)
16. K. Kuwae and T. Shioya, ‘Sobolev and Dirichlet spaces over maps between spaces’, (preprint).
17. T.J. Laakso, ‘Ahlfors Q -regular spaces with arbitrary $Q \geq 1$ admitting weak Poincaré inequality’, *Geom. Funct. Anal.* **10** (2000), 111–123. With erratum, *Geom. Funct. Anal.* **12** 650 (2002). [MR1748917 \(2001m:30027\)](#)
18. E. Lanconelli and D. Morbidelli, ‘On the Poincaré inequality for vector fields’, *Ark. Mat.* **38** (2000), 327–342. [MR1785405 \(2002a:46037\)](#)
19. P. Li, *Lecture notes on geometric analysis*, Lecture Notes Series **6** (Seoul National University, Research Institute of Mathematics, Global Analysis Research Center, Seoul, 1993). [MR1320504 \(96m:58269\)](#)
20. A. Ranjbar-Motlagh, *Analysis on metric-measure spaces*, (Ph. D. Thesis) (New York University, New York, 1998). [MR2612932](#)
21. A. Ranjbar-Motlagh, ‘A note on the Poincaré inequality’, *Studia Math.* **154** (2003), 1–11. [MR1949045 \(2004b:46039\)](#)
22. W. Rudin, *Real and complex analysis*, (3rd edition) (McGraw-Hill Book Co., 1987). [MR0924157 \(88k:00002\)](#)
23. L. Saloff-Coste, *Aspects of Sobolev-type inequalities*, LMS Lecture Note Series **289** (Cambridge Univ. Press, Cambridge, 2002). [MR1872526 \(2003c:46048\)](#)
24. S. Semmes, ‘Finding curves on general spaces through quantitative topology, with applications to Sobolev and Poincaré inequalities’, *Selecta Math.* **2** (1996), 155–295. [MR1414889 \(97j:46033\)](#)
25. K.T. Sturm, ‘Diffusion processes and heat kernels on metric spaces’, *Ann. Probab.* **26** (1998), 1–55. [MR1617040 \(99b:31008\)](#)
26. N.T. Varopoulos, L. Saloff-Coste and T. Coulhon, *Analysis and geometry on groups* (Cambridge Univ. Press, Cambridge, 1992). [MR1218884 \(95f:43008\)](#)

Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.