MR2516169 (2010d:53069) 53C43 (58E20 58J65)

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On harmonic maps from stochastically complete manifolds. (English summary)

Arch. Math. (Basel) **92** (2009), *no. 6,* 637–644.

In the paper under review a nonexistence theorem is obtained for harmonic maps from a stochastically complete manifold to a cone-type domain S in a Riemannian manifold N, i.e., a subset $S = \{x \in N : \varphi(x) < 0\}$, where $\varphi : N \to \mathbb{R}$ is a strictly convex (subharmonic) function. The proof relies on a generalized version of the maximum principle that holds for stochastically complete Riemannian manifolds. As an application, a result is given on the size of minimal submanifolds of Riemannian manifolds whose sectional curvature is bounded from above.

Reviewed by *Theodoros Vlachos*

References

1. A. Atsuji, Remarks on harmonic maps into a cone from a stochastically complete manifold, Proc. Japan Acad., Ser. A, **75,** 105–108 (1999). MR1729854 (2001e:58016)
2. C. Baikoussis and T. Koufogiorgos, Harmonic maps into a cone, Arch. Math., **40,** 372–376 (1983). MR0708601 (85c:58032)
3. W. Ballmann, M. Gromov, and V. Schroeder, Manifolds of nonpositive curvature, Progress in Mathematics, **61,** Birkhäuser Boston, Inc., Boston, MA, 1985. MR0823981 (87h:53050)
4. J. Eells and L. Lemaire, Selected topics in harmonic maps, Reg. Conf. Ser. Math., **50,** AMS, Providence, Rhode Island, 1983. MR0703510 (85g:58030)
5. A. Grigor'yan, Analytic and Geometric Background of Recurrence and Nonexplosion of the Brownian Motion on Riemannian Manifolds, Bull. AMS, **36,** 135–249 (1999). MR1659871 (99k:58195)
6. A. Kasue, Estimates for solutions of Poisson equations and their applications to submanifolds, Differential geometry of submanifolds, Lect. Notes Math., **1090,** 1–14, Springer-Verlag, New York, 1984. MR0775140 (86d:58118)
7. H. Omori, Isometric Immersions of Riemannian Manifolds, J. Math. Soc. Japan, **19,** 205–214 (1967). MR0215259 (35 #6101)
8. S. Pigola, M. Rigoli, and A. G. Setti, Maximum Principles on Riemannian Manifolds and Applications, Memo. AMS, **174,** No. **822,** Providence, Rhode Island, 2005. MR2116555 (2006b:53048)
9. A. Ranjbar-Motlagh, Rigidity of Spheres in Riemannian Manifolds and a Non-Embedding Theorem, Bol. Soc. Bras. Mat. **32,** 159–171 (2001). MR1860867 (2002g:53068)
10. R. M. Schoen and S. T. Yau, Lectures on Differential Geometry, Vol. I, International Press, 1994. MR1333601 (97d:53001)

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