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On the Functoriality of Stratified Desingularizations

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Abstract: This article is devoted to the study of smooth desingularizations, a geometric tool usually employed in the definition of the De Rham Intersection Cohomology with differential forms [12]. In this paper we work with the category of Thom-Mather simple spaces [10], [14]. We construct a functor which sends each Thom-Mather simple space into a smooth manifold called its primary unfolding, and prove that this construction is functorially preserved under Thom-Mather morphisms.

Key words: Intersection cohomology, stratified pseudomanifolds.

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References

[1] J. Brasselet, G. Hector, M. Saralegi, Theorème de De Rham pour les variétés stratifiées, *Ann. Global Anal. Geom.* **9** (3) (1991), 211-243.

[2] G. Bredon, "Introduction to Compact Transformation Groups", Pure and Applied Mathematics Vol.**46**, Academic Press, New York-London, 1972.

[3] F. Dalmagro, Equivariant unfoldings of G-stratified pseudomanifolds, *Extracta Math.* **19** (3) (2004), 289-311.

[4] M. Davis, Smooth G-manifolds as collections of fiber bundles, *Pacific J. Math.* **77** (2) (1978), 315-363.

[5] M. Ferrarotti, Extension of functions defined on singular sets, Coen, Salvatore (ed.), Geometry Seminars, 1998–1999 (Italian) (Bologna, 1997), 137–141, Univ. Stud. Bologna, Bologna, 2000.

[6] M. Goresky, R. MacPherson, Intersection homology theory, *Topology* **19** (2) (1980), 135-162.

[7] G. Hector, M. Saralegi, Formes différentielles d'intersection: un théorème de de Rham pour l'homologie d'intersection des préstratifications abstraites, *C. R. Acad. Sci. Paris Sér I Math.* **308** (1) (1989), 25-28.

[8] C. MacCrory, "Poincaré Duality in Spaces with Singularities", Ph. D. Thesis, Brandeis University, 1972.

[9] G. Padilla, On normal stratified pseudomanifolds, *Extracta Math.* **18** (2) (2003), 223-234.

[10] M. J. Pflaum, "Analytic and Geometric Study of Stratified Spaces", Lecture Notes in Mathematics, 1768, Springer-Verlag, Berlin, 2001.

[11] R. Popper, Compact Lie group actions on pseudomanifolds, *Illinois J. Math.* **44** (1) (2000), 1-19.

[12] M. Saralegi, Homological properties of stratified spaces, *Illinois J. Math.* **38** (1) (1994), 47-70.

[13] N. Steenrod, "The Topology of Fiber Bundles", Princeton Mathematical Series, 14, Princeton University Press, Princeton, N. J., 1951.

[14] R. Thom, Ensembles et morphismes stratifiés, *Bull. Amer. Math. Soc.* **75** (1969), 240-284.