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Local complete Segal spaces. **(English summary)**

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The principal objective in this paper is to develop a model structure on bi-simplicial presheaves where the weak equivalences are stackwise equivalences in the complete Segal model structure on bi-simplicial sets, and to show that it is Quillen-equivalent to the local Joyal model structure on simplicial presheaves [N. J. Meadows, Theory Appl. Categ. **31** (2016), Paper No. 24, 690–711; MR3531993]. The existence of the local complete Segal model structure was conjectured in [C. W. Rezk, Trans. Amer. Math. Soc. **353** (2001), no. 3, 973–1007 (§1.3); MR1804411]. The author exploits the technique of Boolean localization to develop this model structure [J. F. Jardine, *Local homotopy theory*, Springer Monogr. Math., Springer, New York, 2015; MR3309296].

This paper is the second in the trilogy, consisting of [N. J. Meadows, op. cit.; "Cocycles in local higher category theory", preprint, arXiv:1802.06838] besides this paper, with the aim of establishing local analogues of three of the main extant models of higher category theory and to establish a series of Quillen equivalences connecting them. The final objectives of this ambitious project are to apply these results to C. T. Simpson's theory of higher stacks [in *Alexandre Grothendieck: a mathematical portrait*, 83–141, Int. Press, Somerville, MA, 2014; MR3287695] and to investigate variants of non-abelian cohomology [N. J. Meadows, op. cit. (§5), arXiv:1802.06838]. As such, the author imitates local higher category theory [J. F. Jardine, op. cit.]. *Hirokazu Nishimura*

References

1. Goerss, P.G., Jardine, J.F.: Simplicial Homotopy Theory. Modern Birkhäuser Classics. Birkhäuser Verlag, Basel (2009). (reprint of the 1999 edition) MR2840650
2. Hirschorn, P.S.: Model Categories and their Localizations. Mathematical Surveys and Monographs. American Mathematical Society, Providence, RI (2003) MR1944041
3. Jardine, J.F.: Fibred sites and stack cohomology. Math Z. **254**, 811–836 (2006) MR2253470
4. Jardine, J.F.: Local Homotopy Theory. Springer Monographs in Mathematics. Springer, New York (2015) MR3309296
5. Joyal, A.: Quasi-categories and Kan complexes. JPAA **175**, 207–222 (2002) MR1935979
6. Joyal, A., Tierney, M.: Quasi-categories vs. Segal spaces. In: Davydov, A., Batanin, M., Johnson, M., Lack, S., Neeman, A. (eds.) Categories in Algebra, Geometry and Mathematical Physics, Contemporary Mathematics, vol. 431, pp. 277–326. American Mathematical Society, Providence (2007) MR2342834
7. Lurie, J.: Higher Topos Theory. Annals of Mathematics Studies. Princeton University Press, Princeton (2009) MR2522659
8. Meadows, N.J.: The local Joyal model structure. TAC **31**(24), 690–711 (2016) MR3531993
9. Meadows, N.J.: Cocycles in local higher category theory. Preprint, https://arxiv.org/abs/1802.06838 (2018) (submitted to JPAA)

10. Rezk, C.: A model for the homotopy theory of homotopy theories. Trans. AMS **353**, 973 (2001) MR1804411
11. Simpson, C.T.: Descent. In: Schneps, L. (ed.) Alexandre Grothendieck: A Mathematical Portrait, pp. 83–141. International Press, Somerville (2014) MR3287695

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