

# Correction to the article

## Preorientations of the derived motivic multiplicative group

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We correct a claim concerning motivic  $S^1$ -deloopings.

55U35; 18D10, 19D06, 55P48

In [3, Theorem 4.4], we claim that the classical recognition principle of May et al carries over to motivic  $S^1$ -spectra with respect to the  $\mathcal{A}^1$ -local model structure. Unfortunately, the proof of this theorem is incomplete.

Moreover, Choudhury [1] shows that a certain  $\mathcal{A}^1$ -local sheaf  $\mathbb{Z}(\mathbf{G}_m)$  of abelian groups is not strongly  $\mathcal{A}^1$ -invariant. Hence this sheaf, considered as a group-like object in  $\Delta^{\text{op}} \text{PrShv}(\mathbb{C})$ , has only  $S^1$ -deloopings which are not  $\mathcal{A}^1$ -local, contradicting [3, Theorem 4.4]. The correct version of Theorem 4.4 is stated and proved in the recent preprint of Elmanto, Hoyois, Khan, Sosnilo and Yakerson [2]. If we just consider the Nis-local model structure before  $\mathcal{A}^1$ -localization, Theorem 4.4 is true by Lurie [4, Theorem 5.2.6.15].

Consequently, the proof of Theorem 1.2 of [3] is incomplete for the  $\mathcal{A}^1$ -local structure and complete only Nis-locally. Currently we do not know if Theorem 1.2 is true as stated; hopefully future research will answer this question. On the other hand, the mistake does not affect any of the results of Section 3 of [3], where various model structures related to motivic operads are studied.

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## References

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- [2] E Elmanto, M Hoyois, A A Khan, V Sosnilo, M Yakerson, *Motivic infinite loop spaces*, preprint (2017) [arXiv](#)

- [3] **J Hornbostel**, *Preorientations of the derived motivic multiplicative group*, *Algebr. Geom. Topol.* 13 (2013) 2667–2712 [MR](#)
- [4] **J Lurie**, *Higher algebra*, book project (2017) <http://www.math.harvard.edu/~lurie/papers/HA.pdf>

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