

## Action operads comments to fix

### 1. INTRODUCTION

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### 2. ACTION OPERADS

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### 3. OPERADS IN THE CATEGORY OF CATEGORIES

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### 4. MONOIDAL STRUCTURES AND MULTICATEGORIES

- Use  $\lambda\mathbf{mc}$  for lambda monoidal categories

### 5. INVERTIBLE OBJECTS

- Rewrite intro: Need to explain that the goal is to understand some group actions
- Decide on ELambda algebras or Lambda monoidal categories throughout (we decided the second!)
- New notation: added earlier (line 905, search beta\_to\_oplus), just need to implement, search for action maps or superscript tensors
- Fix weakly invertible section

Leftover fixes that I'm not sure about:

- Move comment (QQQ)
- Fix paragraph; make clear we are determining composition
- Explain M strategy, include forward refs

### 6. INVERTIBILITY AND GROUP ACTIONS

- I want to write  $\Lambda^\oplus$  for the underlying monoid maybe??
- **why? This one involves real math**
- not happy with last section

### 7. COMPUTING AUTOMORPHISMS OF THE UNIT

- 4.1.3 check 2.3.10: need to make sure this is in an earlier section, and ref'ed
- check  $4n$  or  $2n$
- mentioned Delta, I
- explain purpose
- improve proof 4.2.3
- fixed proof 4.3.2
- check commutative Square
- redo 4.4
- insert diagram

- bad line break at the beginning of 4.5
- consistent text after 4.5.3
- move something to earlier
- make sure length and size notation is introduced earlier
- clarify this
- highlight that star means the inverse under tensor product for morphisms
- change prove to shows
- bad line break
- insert the proof from Ed's email
- put a short proof
- check the note
- change express to describe
- isomorphism symbol
- change make sure to ensures
- remove calculation
- change we want to do

## 8. A FULL DESCRIPTION OF $L_n$

- bad line break
- remove exposition
- fix fancy G
- change G to lambda
- isomorphism symbol
- tensor product given component wise
- check reference
- rewrite calculation
- check universal property
- insert for a simple example

## 9. EXAMPLES

- Actually read this section, fix anything

## Comments addressed

### 10. INVERTIBLE OBJECTS

- Include notation for  $\eta$  as the unit here
- Change to equalizers
- Change to  $(LX)_{inv} = LX$
- Fix  $()_s$
- Include triangle NO
- Uniform gp superscripts
- Remove actually
- Ref  $\eta$
- Replace with is, remove parts
- Remove proof
- Fix ab superscripts, same as gp
- qi
- Under red line: move? make remark? delete some?
- Where do we say this?
- Need 2-adjunction: this should follow from Thm 8.6 in the enriched\_sketches paper I saved
- include forward ref to where we use crefpi: I can't find it
- Get better Eckmann-Hilton ref: don't care anymore

### 11. INVERTIBILITY AND GROUP ACTIONS

- Forward ref
- definition env
- little wording fixes
- change G to Lambda
- S vs Sigma for symmetric groups: I picked Sigma
- Think about free monoid lem again
- Fix triangle
- lots of notation issues (e, G, length bars)
- why splitting
- missing ref?
- splits by construction: hmm
- ref?
- for v, v' not delta of something
- inverses for morphisms under comp vs tensor
- more G's (x2)
- another missing ref
- another G
- include corollary?
- forward refs
- practical?

### 12. COMPUTING AUTOMORPHISMS OF THE UNIT

- in the next two results

- 4.1.2 two boxes
- the above following square
- insert =
- remove functor
- isomorphism symbol

### 13. A FULL DESCRIPTION OF $L_n$

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### 14. EXAMPLES

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