Winter Braids Lecture Notes

Brendan Owens

Corrigendum to Knots and 4-manifolds

Corrigendum to Knots and 4-manifolds

BRENDAN OWENS

Abstract

We replace an example which was based on an unjustified claim with a question.

Example 1.2 in the published version of my lecture notes *Knots and 4-manifolds* [2], from Winter Braids IX , contained an unjustifed claim and should be replaced by the following question, which remains open at the time of writing as far as I know.

Question. *Is there only one isotopy class of ribbon disk for the unknot?*

A positive answer for ribbon disks with at most three critical points follows from theorems of Gabai and Scharlemann [1, 3]. These show that the only way to apply a band move to the unknot and obtain the 2-component unlink is the obvious planar diagram, which gives rise to the standard disk pushed in from S^3. I previously asserted that a positive answer for the general case also followed. Unfortunately the straightforward induction argument which I had in mind does not follow since intermediate level sets of a ribbon disk for the unknot may not be split links. I am very grateful to Jeff Meier and Alex Zupan for pointing this out to me.

References

1. David Gabai, *Genus is superadditive under band connected sum*, Topology **26** (1987), no. 2, 209–210.
2. Brendan Owens, *Knots and 4-manifolds*, Winter Braids Lecture Notes **6** (2019), Exposé no. 2, 26 p.
3. Martin Scharlemann, *Smooth spheres in* $\mathbf{R}^4$ *with four critical points are standard*, Invent. Math. **79** (1985), no. 1, 125–141.

School of Mathematics and Statistics,University of Glasgow, Glasgow, G12 8SQ, United Kingdom •
brendan.owens@glasgow.ac.uk