

CORRIGENDUM TO
‘ON DIFFERENTIAL CHARACTERISTIC CLASSES’

MAN-HO HO

(First published online 28 March 2016)

Abstract

In this erratum we correct a mistake in Ho [‘On differential characteristic classes’, *J. Aust. Math. Soc.* **99**(1) (2015), 30–47].

1. Corrigendum

A typo in line –3 of [2, page 34]: $\Omega_{\mathbb{Z}}^{2k-1}(M)$ must be replaced by $\Omega_A^{2k-1}(M)$.

A mistake in [2, Proposition 3.1]: it does not hold in the stated generality. In fact, [2, Proposition 3.1] only holds for Lie groups G with finitely many components with the additional assumption that $H^{\text{even}}(BG)$ is torsion free. In particular, [2, Proposition 3.1] holds for $\text{GL}(n; \mathbb{C})$ and $\text{U}(n)$; that is, for differential characteristic classes for complex (Hermitian) vector bundles, while it does not hold for $\text{O}(n)$, and so forth. The differential Stiefel–Whitney classes [3] is a counterexample.

Of course [2, Proposition 3.1] would hold in the stated generality if the condition $\delta_2(S_{P,u}(E, \theta)) = u$ is added, as guaranteed by [1, Theorem 2.2]. But the point of the proof of [2, Proposition 3.1] is to avoid using universal bundles and universal connections. The proof of the general case and the analog of [2, Proposition 3.1] for some other Lie groups will be addressed in a future paper.

Acknowledgement

We would like to thank Thomas Schick for bringing up this point.

References

- [1] J. Cheeger and J. Simons, ‘Differential characters and geometric invariants’, in: *Geometry and Topology (College Park, MD, 1983–1984)*, Lecture Notes in Mathematics, 1167 (Springer, Berlin, 1985), 50–80.
- [2] M.-H. Ho, ‘On differential characteristic classes’, *J. Aust. Math. Soc.* **99**(1) (2015), 30–47.
- [3] J. W. Zweck, ‘The Stiefel–Whitney spark’, *Houston J. Math.* **27**(2) (2001), 325–351.

MAN-HO HO, Department of Mathematics,
Hong Kong Baptist University,
Kowloon Tong, Kowloon,
Hong Kong
e-mail: homanho@hkbu.edu.hk