ON THE QUIVER PRESENTATION OF THE DESCENT ALGEBRA OF TYPE A OR B

MARCUS BISHOP

This is an abstract of the PhD thesis *On the Quiver Presentation of the Descent Algebra of Type A or B* written by Marcus Bishop under the supervision of Götz Pfeiffer at the School of Mathematics, Statistics, and Applied Mathematics of the National University of Ireland, Galway and submitted in September 2010.

In this thesis we study the descent algebra of the Coxeter group of type A or B using a quiver presentation. The descent algebra is a quotient of the algebra of streets described in the recent paper [1]. To derive the presentation, we introduce an algebra of binary trees. The trees reflect the structure of the algebra of streets in a natural way and make it possible to construct a quiver whose path algebra is essentially the algebra of streets. Then expressing the descent algebra as a quotient of the algebra of binary trees and transferring the quotient to the path algebra provides the desired presentation. We then use the presentation to calculate the Cartan invariants and the projective indecomposable modules of the descent algebra.

References

[1] Götz Pfeiffer: *A quiver presentation for Solomon's descent algebra.* Adv. Math. 220 (5) (2009) 1428–1465. URL http://arxiv.org/pdf/0709.3914v3.

Ruhr-Universität Bochum, Fakultät für Mathematik, Universitätsstrasse 150, D-44780, Bochum, Germany.
E-mail address: marcus.bishop@rub.de