

SERRE PRESENTATION FOR QUANTUM SYMMETRIC PAIR COIDEALS OF KAC-MOODY TYPE

HAEDEWIJCH DE CLERCQ

ABSTRACT

Quantum symmetric pairs consist of a quantum group $U_q(\mathfrak{g})$, together with a one-sided coideal subalgebra. The structure theory of these quantum symmetric pair coideals has been developed by Letzter for semisimple Lie algebras \mathfrak{g} and was later extended to symmetrizable Kac-Moody algebras by Kolb. A crucial tool in the development of their representation theory is their presentation by generators and relations. Up to recently, the most intricate of these defining relations, which are of inhomogeneous quantum Serre type, were only known explicitly for lower rank cases. In this talk I will present novel closed expressions for these quantum Serre relations, valid without restrictions on the Kac-Moody algebra \mathfrak{g} . These complete the set of defining relations. I will explain how they can be derived from Letzter's projection technique and a binary distributive expansion. Furthermore, I will outline an alternative approach, recently pursued by Casper, Kolb and Yakimov, to obtain these relations in an elegant form using orthogonal polynomials. Special attention will be drawn to the generalized q -Onsager algebras, a class of split quantum symmetric pair coideals which arise naturally in certain integrable models.

UNIVERSITÉ DE GENT

E-mail address: `Hadewijch.DeClercq@UGent.be`