

**$SL_q(N)$  AS A BRAIDED HOPF ALGEBRA IN THE CATEGORY  
OF YETTER-DRINFELD MODULES OVER  $U_q^{\text{ext}}(\mathfrak{sl}_N)^{\text{cop}}$**

DANIEL BULACU

ABSTRACT. We study the generalized quantum double construction for paired Hopf algebras with particular attention to the case when the generalized quantum double is a Hopf algebra with projection. Applying our theory to a coquasitriangular Hopf algebra  $(H, \sigma)$ , we see that  $H$  has an associated structure of braided Hopf algebra in the category of Yetter-Drinfeld modules over  $H_\sigma^{\text{cop}}$ , where  $H_\sigma$  is a subHopf algebra of  $H^0$ , the finite dual of  $H$ . Specializing to the quantum group  $H = SL_q(N)$ , we find that  $H_\sigma$  is  $U_q^{\text{ext}}(\mathfrak{sl}_N)$ , so that the duality between these quantum groups is just the evaluation map. Furthermore, we obtain explicit formulas for the braided Hopf algebra structure of  $SL_q(N)$  in the category of left Yetter-Drinfeld modules over  $U_q^{\text{ext}}(\mathfrak{sl}_N)^{\text{cop}}$ .

This is a joint work with Margaret Beattie.

FACULTY OF MATHEMATICS AND INFORMATICS, UNIVERSITY OF BUCHAREST, STR. ACADEMIEI  
14, RO-010014 BUCHAREST 1, ROMANIA  
*E-mail address:* `dbulacu@al.math.unibuc.ro`