

# Braided Hopf Algebras Arising from Matched Pairs of Groups

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## Abstract

Given two groups  $G$  and  $F$  with actions  $\triangleleft : G \times F \rightarrow G$  and  $\triangleright : G \times F \rightarrow F$  we can define algebra and coalgebra structures on  $\mathbb{k}^G \otimes \mathbb{k}F$ . However, such structures do not always make  $\mathbb{k}^G \otimes \mathbb{k}F$  a bialgebra or a braided bialgebra. The first objective of this work is to establish the necessary and sufficient conditions for  $\mathbb{k}^G \otimes \mathbb{k}F$  to be, first, a bialgebra and, second, a braided bialgebra with a pre-assigned braiding, and to show that, in this case, we obtain a Hopf algebra and a braided Hopf algebra, respectively. Next, we seek necessary and sufficient conditions for the braided Hopf algebra to be realizable over the category of left Yetter-Drinfeld modules over some Hopf algebra.