International Mathematical Forum, 4, 2009, no. 48, 2377 - 2389

Left Hopf Algebras and Self Duality

H. A. Shoaib and M. M. Al-Shomrani

Department of Mathematics
King Abdulaziz University, Jeddah
P. O. Box 80257, Jeddah 21589, Saudi Arabia
malshomrani@hotmail.com

Abstract

In this paper, we introduce the concept of a left bicrossproduct Hopf algebra associated to a factorization of a finite group X into a subgroup G and a subsemigroup M. Moreover, we show that for a left Hopf algebra $H = kM \bowtie k(G)$ associated to a factorization $X = GM$ of a group X into a subgroup G and a subsemigroup M with identity and left inverse property, there is a left Hopf algebra isomorphism $H \to H^*$ which sends basis elements to basis elements can be constructed from a factor-reversing isomorphism of $X = GM$ and vise versa.

Mathematics Subject Classification: 18D10; 16W30

Keywords: Bicrossproduct, left Hopf algebra, factorization of finite groups