1112-16-646 **David Riley*** (`dmriley@uwo.ca`), Department of Mathematics, Western University, London, Ontario N6A 5B7, Canada. *Identities of algebras with Hopf algebra actions.*

Let H be a Hopf algebra with a finite basis $\mathcal{B}$, and let A be an algebra with an H-module action. We shall say that the H-action on A is a positive generalized H-algebra action if, for every $h \in H$, there exists $h_{i_1}, h_{i_2} \in H$ such that

$$h \cdot (ab) = \sum (h_{i_1} \cdot a)(h_{i_2} \cdot b),$$

for all $a, b \in A$. Furthermore, we shall say that A is H-rewritable of degree d if, for every $a_1, \ldots, a_d \in A$, there exists scalars $\alpha_{\sigma,b}$ (depending on $a_1, \ldots, a_d$) such that

$$a_1 \cdots a_d = \sum \alpha_{\sigma,b} a_{\sigma(1)}^{b_1} \cdots a_{\sigma(d)}^{b_d},$$

where $1 \neq \sigma \in \mathcal{S}_d$ and $b = (b_1, \ldots, \ b_d) \in \mathcal{B}^d$. Our goal is to extend various classical PI-theory results by showing that, if an associative algebra A is a positive generalized H-algebra (when viewed as an associative, Lie or Jordan algebra) and A is H-rewritable of degree d, then A satisfies a polynomial identity of $(d, |\mathcal{B}|)$-bounded degree. (Received August 11, 2015)