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Yuri Bahturin and **Mikhail Kochetov*** (mikhail@math.mun.ca), Department of Mathematics and Statistics, Memorial University of Newfoundland, St. John's, NL A1C 5S7, Canada, and **Susan Montgomery**. *Group grading and Hopf actions on algebras*.

Group gradings on algebras, especially simple algebras, have been extensively studied since the 1960s. V. Kac classified the gradings by cyclic groups on finite-dimensional simple Lie algebras over a field of characteristic zero in 1968. All gradings on the full matrix algebra in any characteristic by an arbitrary group G were described by Y. Bahturin, M. Zaicev and S. Sehgal (2001–2002). If G is a finite abelian group whose order is not divisible by the characteristic of the ground field F , then a G -grading on an algebra A is equivalent to an action of the dual group \widehat{G} on A by automorphisms. This duality of gradings and actions was used in the work of Y. Bahturin, M. Zaicev and I. Shestakov (2005–2006) to describe all gradings by finite abelian groups on most finite-dimensional simple Lie and Jordan algebras in characteristic zero. In positive characteristic, however, the gradings no longer correspond to actions by automorphisms. We will discuss the recent results obtained using the actions of the dual Hopf algebra $(FG)^*$ instead of the dual group \widehat{G} . (Received August 06, 2007)