

Almost fine gradings on algebras and classification of gradings up to isomorphism

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Since the works of Patera-Zassenhaus (1989) and Bahturin-Sehgal-Zaicev (2001), the problem of classifying gradings by groups on various algebras has received much attention. There are typically two kinds of classification of gradings on a given algebra A : fine gradings up to equivalence or all G -gradings, for a fixed group G , up to isomorphism. These classifications are related, but it is not straightforward to pass from one to the other. In this talk, based on a recent paper with A. Elduque, we introduce a class of gradings, which we call *almost fine*, on a finite-dimensional algebra A over an algebraically closed field, so that every G -grading on A is obtained from an almost fine grading in an essentially unique way (which is not the case with fine gradings). For abelian groups, we give a method of obtaining all almost fine gradings if fine gradings are known.

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