

Finite symmetric algebras in tensor categories and Verlinde categories of reductive groups

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I'll discuss objects in symmetric tensor categories that have simultaneously finite symmetric and finite exterior algebra. This forces the characteristic of the base field to be $p > 0$, and the maximal degrees m, n of non-vanishing symmetric and exterior powers to add up to a multiple of p . I'll give a complete classification of objects in symmetric tensor categories for which this sum equals p . All resulting tensor categories are Verlinde categories of reductive groups for $p > 3$. I'll also discuss examples of simple objects for which $m+n$ is a larger multiple of p ; e.g. examples with $m+n = p^r$ arise from higher Verlinde categories defined by Benson, Ostrik and myself, as well as Coulembier. I'll also discuss the possible values of $m+n$: For $p > 3$, they are obviously all the multiples of p , while for $p = 2, 3$, they are all the multiples of p^2 (which is not obvious). This is joint work with Kevin Coulembier and Joe Newton.