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Good filtrations of tensor products

Let G be a simple, simply connected algebraic group over an algebraically closed field of prime characteristic. Recent work of Kildetoft and Nakano and of Sobaje has shown close connections between two long-standing conjectures of Donkin: one on tilting modules and the lifting of projective modules for Frobenius kernels of G and another on the existence of certain filtrations of G -modules. A key question related to these conjectures is whether the tensor product of a Steinberg module with a simple module admits a good filtration. This talk will discuss these connections and present some new results on this good filtration question.