

Counterexamples for the slice technique for cactus rank and border cactus rank

Tuesday, May 9, 2023 4:00 PM (1 hour)

The slice technique is a tool which let use to translate the question about rank (or border rank) of a tensor in to the analogue question about the subspace spanned by tensors of a smaller order. The technique works in the case of a rank and border rank, but not for cactus and border cactus rank. Gesmundo, Oneto and Ventura gave an example of a family of forms such that their simultaneous cactus rank cannot be read as the cactus rank of tensor living in a bigger space. With a help of Multigraded Cactus Apolarity Lemma we provide a simpler one. We also show the minimal example of a tensor p in $C^N \otimes Sym^d(C^n)$ with a different border cactus rank than the border cactus rank of $p(C^N *)$.

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