

## Regularity of tangential decompositions

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Given a form  $F$  of degree  $d$ , its tangential decompositions are additive decompositions of  $F$  that involve only terms of type  $L^{d-1}G$ , where  $L$  and  $G$  are linear forms. To any such decomposition, we can naturally associate 0-dimensional apolar schemes made of simple points (when  $L = G$ , projectively), and 2-jets (when  $L$  and  $G$  are not proportional). Among these schemes, it is possible to find irredundant ones (i.e. those minimal by inclusion) that are not regular in degree  $d$ . Nonetheless, this never happens for the shortest schemes (i.e. those minimal by length), as we can always “refine” such an irregular scheme to obtain a  $d$ -regular and strictly shorter one, of the same type. In this talk, I will illustrate this construction and briefly discuss its implications for the explicit computation of minimal tangential decompositions of forms. This is based on a joint work with A. Bernardi and A. Oneto.