Liaison and Castelnuovo-Mumford regularity

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The Castelnuovo-Mumford regularity of an embedded projective scheme is an important invariant that measures several datas at a time:

- when Serre vanishing occurs for the defining ideal sheaf (when tensoring with powers of the very ample line bundle giving the embedding),
- the algebraic complexity of the defining ideal (in terms of finite free resolutions, or in terms of Grobner bases),
- the degree where one should truncate the ideal to have a linear free resolution (this is useful for instance when constructing the Hilbert scheme).

We will present a joint work with Bernd Ulrich, where we prove bound for this invariant in terms of defining equations. This result generalizes previous work of Bertram, Ein and Lazarsfeld, and relies on liaison techniques.