

II Joint Conference of the Belgian, Royal Spanish and Luxembourg Mathematical Societies  
Logroño, June 6–8, 2016

## On the estimation of numerical invariants of a graded module in terms of its Hilbert series

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Let  $M$  be a graded module over a polynomial ring, and  $H(M)$  the Hilbert series of  $M$ . It is interesting to estimate numerical invariants of  $M$  which cannot be easily read off from  $H(M)$ , such as the depth and the Castelnuovo-Mumford regularity. In this talk we will explain the main ingredients in our algebraic-combinatorial approach to the latter invariants, based on the notions of Hilbert depth and Hilbert regularity. This is (part of) several joint works with W. Bruns, B. Ichim, L. Katthn and J. Uliczka.

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