ID de Contribution: **15** Type: **Non spécifié**

Maximal Hilbert functions of Artinian quotients of a product ring

jeudi 26 juin 2025 10:30 (20 minutes)

Given a field k and a graded k-algebra A, let |FΨ^h_A and |HΨ^h_A, be the schemes parameterizing filtered quotients and graded quotients of A with Hilbert function h. Let |FΨ^{h,t}*A and |HΨ^{h,t}_A be their subschemes of Artinian quotients of socle type t.*
In 1984, Iarrobino proved that, if k is infinite, if A is a polynomial ring, if t is permissible in a certain sense, and if h = h^I where
h^I(p) := min{ a(p), sum{q>0} t(q)a(q − p) } and a(i) := dim A_i,
then |FΨ^{h,t}_A is an affine space bundle over |HΨ^{h,t}_A, and |HΨ^{h,t}_A is nonempty, irreducible and covered by open subschemes, each isomorphic to /A^N with N explicit. For any A, there's a similar maximal h, but it's not necessarily equal to h^I.
In this talk, we analyze the case where A := SxT and h \neq h^I. When S := k[x], a polynomial ring in one variable, we prove that |FΨ^{h,t}_A and |HΨ^{h,t}_A are close to be as nice as when h = h^I. In 2001, Cho and Iarrobino gave such examples with T := k[y,z]/(z^5) in the graded case. The new work described here is joint work with Steve Kleiman.

Orateur: Prof. KLEPPE, Jan O. (Oslo Metropolitan University)