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## **Degree Growth**

Abstract: Consider a polynomial transformation f of a vector space V and iterate f; that is, compose f with itself, and then with f again, etc. Doing so, one gets a sequence of polynomial transformations  $f^n$ . Computing the degree of the formulas defining  $f^n$ , one obtains a sequence of integers  $deg(f^n)$ . The problem I will discuss is: what type of sequences do we obtain in this way?

For instance, in dimension 2, the degree of f(x,y)=(y,xy) is 2, then the degree of  $f^2(x,y)=(xy,xy^2)$  is 3, then  $f^3(x,y)=(xy^2,x^2y^3)$  has degree 5, ... and the degree of  $f^n$  is given by a sequence which is well known in Pisa.

The question is related to dynamical systems, basic algebraic geometry, and some number theory.

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