Abstract: Suppose $k$ is a field and $I$ is an ideal in the polynomial ring $k[X_1, X_2, \ldots, X_n]$. M. P. Murthy conjectured that $\mu(I) = \mu\left(\frac{I}{I^2}\right)$, where $\mu$ denotes the minimal number of generators. The conjecture is valid when, $\mu\left(\frac{I}{I^2}\right) \geq \dim(A) + 2$, which is due to N. Mohan Kumar [Mk].

Recently, a lot of excitement was created due to a claimed proof of the conjecture, in its entirety, when $k$ is an infinite perfect field, with $1/2 \in k$, by Jean Fasel [F]. This was followed by my claims of variety of improvements of the same [Ma1]. However, Fasel’s proof was found to be incomplete, consequently, so was mine. A counterexample [MMu] of a stronger claim by Fasel surfaced and, subsequently strengthened [Ma2].

In this talk, I will discuss background and results on this conjecture and explain the above example. Let me emphasize, the conjecture above remains open, and there is no counterexample to the conjecture, as stated.

References


