How Upper and Lower Complexity Bounds meet in Elimination Theory (Ten years later)

Luis M. Pardo[a]

[a]Depto. de Matemáticas, Estadística y Computación
Facultad de Ciencias-Universidad de Cantabria
Avda. Los Castros s/n. E-39071 SANTANDER, Spain.
e-mail: luis.pardo@unican.es

The talk is viewed as a continuation ("ten years later") of a plenary talk given by the author in AAECC–11 (Paris, 1995). The talk will overview some central statements concerning the complexity of solving systems of multivariate polynomial equations. From the symbolic/universal approach to the numerical/non–universal approach. Some new results concerning the average behavior of the linear and non–linear condition number of singular data will be exhibited (cf.[Beltrán, Pardo, 2005a]). Recent results (that exhibit constructible (and finite) classes of "good initial systems" solving efficiently almost all polynomial equations by linear homotopic methods) will also be introduced (cf. [Beltrán, Pardo, 2005b]).