Spaces of resultants of bounded multiplicity and its related problems

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For positive integers $m, n, d \geq 1$ with $(m, n) \neq (1, 1)$ and a field $\mathbb{F}$ with its algebraic closure $\overline{\mathbb{F}}$, let $\text{Poly}_{n}^{d,m}(\mathbb{F})$ denote the space of all $m$-tuples $(f_{1}(z), \ldots, f_{m}(z)) \in \mathbb{F}[z]$ of monic polynomials of the same degree $d$ such that polynomials $f_{1}(z), \ldots, f_{m}(z)$ have no common root in $\overline{\mathbb{F}}$ of multiplicity $\geq n$. These spaces were first considered by Farb and Wolfson in [1] as a generalization of spaces studied by Arnold, Vassiliev, Segal and others in different contexts (eg. [2], [3], [5], [6]). In this talk we shall investigate the homotopy type of the space $\text{Poly}_{n}^{d,m}(\mathbb{C})$ for the case $\mathbb{F} = \mathbb{C}$ with $m, n \geq 2$, and announce our recent joint work with A. Kozlowski [4]. Our results generalize those of [1] for $\mathbb{F} = \mathbb{C}$ and also results of G. Segal [5], V. Vassiliev [6] and others for $m \geq 2$ and $n \geq 2$.

References


