On the extended Vassiliev conjecture

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We present new upper bounds for the height of elements in the cohomology of the unordered configuration space $H^*(\mathrm{Conf}_n(\mathbb{R}^d)/\mathfrak{S}_n;\mathbb{F}_p)$ with coefficients in the field $\mathbb{F}_p$.

In the special case when d is a power of 2 and $p = 2$ we settle the original Vassiliev conjecture by proving that $\mathrm{height}(H^*(\mathrm{Conf}_n(\mathbb{R}^d)/\mathfrak{S}_n;\mathbb{F}_2)) = d$.

As applications of these results we obtain new lower bounds for the existence of complex k-regular maps as well as for complex ℓ-skew maps $\mathbb{C}^d \to \mathbb{C}^N$.