
A combinatorial analysis of Severi degrees

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Abstract

Based on results by Brugall'e and Mikhalkin, Fomin and Mikhalkin give formulas for computing classical Severi degrees N_d ; using long-edge graphs. In 2012, Block, Colley and Kennedy considered the logarithmic version of a special function associated to long-edge graphs which appeared in Fomin-Mikhalkin's formula, and conjectured it to be linear. They have since proved their conjecture. At the same time, motivated by their conjecture, we consider a special multivariate function associated to long-edge graphs that generalizes their function. The main result of this paper is that the multivariate function we define is always linear.

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