THE DENSITY OF RATIONAL LINES ON HYPERSURFACES: A BIHOMOGENEOUS PERSPECTIVE

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Abstract: Let F be a non-singular homogeneous polynomial of degree d in n variables. We give an asymptotic formula of the pairs of integer points $(\mathbf{x}, \mathbf{y})$ with $|\mathbf{x}| \leq X$ and $|\mathbf{y}| \leq Y$ which generate a line lying in the hypersurface defined by F, provided that n is greater than roughly $2^d d^6$. In particular, by restricting to Zariski-open subsets we are able to avoid imposing any conditions on the relative sizes of X and Y .

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