Gaps in the number of generators of monomial Togliatti systems - Part I

Charles Almeida∗ (UNICAMP)

A longstanding open problem in Algebraic Geometry is the classification of smooth projective varieties verifying at least one Laplace equation. In [MMO] the authors provided a systematic way of producing examples of such varieties by relating them with homogeneous artinian ideals which fails weak Lefschetz property (WLP), such ideals are called Togliatti systems. In [MM] the authors proved that the number of generators of a minimal monomial Togliatti system of forms of degree $d$ in $n + 1$ variables lies in the interval $[2n + 1, \binom{n + d - 1}{n - 1}]$.

In this talk, we will introduce the notion of Togliatti systems, their relation with varieties verifying at least one Laplace equation, and prove that the interval $[2n + 3, 3n - 1]$ can not be realized as the number of generators of a minimal monomial Togliatti system.

∗ charles@ime.unicamp.br

This is a joint work with Aline V. Andrade (UFSCAR) and Rosa Maria Miró-Roig (UB).

Bibliography

