Meghal Gupta and Gregg Musiker* (musiker@math.umn.edu). Applications of New F-polynomial Formulas in terms of C-Vectors. Preliminary report.

Given a quiver associated to a cluster algebra, and a sequence of vertices, iterative mutation leads to F-polynomials which appear in numerous places in the cluster algebraic literature. In particular, due to the Caldero-Chapoton formula, their coefficients can be expressed in terms of Euler characteristics of quiver Grassmannians. In special cases, there are more concrete combinatorial formulas for them, for example in terms of perfect matchings.

With the motivations behind these F-polynomials in mind, we describe the details of a new closed form formula for them found by the first author as part of the University of Minnesota 2018 REU. This explicit formula expresses coefficients of F-polynomials in terms of elementary manipulations with C-matrices. We then describe more recent work giving new interpretations, applications, and questions arising from said formula. (Received February 02, 2019)