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Andrei Zelevinsky* (andrei@neu.edu), Department of Mathematics, Northeastern University, Boston, MA 02115. *Laurent phenomenon via quiver representations*. Preliminary report.

The Laurent phenomenon due to S. Fomin and the author exhibits a class of rational recurrences whose solutions are unexpectedly given by Laurent polynomials in the initial terms. Recently P. Caldero and F. Chapoton found a beautiful interpretation for the coefficients of some of these Laurent polynomials as the Euler-Poincaré characteristics of suitable Grassmannians of quiver representations. This opens up an opportunity to use the geometry of these Grassmannians for proving that the coefficients in question are positive, or even better, for expressing them in explicit combinatorial terms. To illustrate these ideas, we focus on the sequence (u_n) satisfying the recurrence relation $u_n = (u_{n-1}^b + 1)/u_{n-1}$, where b is a positive integer. As a special case of the Laurent phenomenon, each u_n is an integer Laurent polynomial in the initial terms u_1 and u_2 . The positivity of the coefficients in these Laurent polynomials is still open for any $b > 2$. The related quiver is the generalized Kronecker quiver with two vertices and b arrows from one to another. We obtain a new realization of the relevant representations of this quiver, and use it to give a new combinatorial expression for the coefficients in the case $b = 2$. (Received August 12, 2005)