Rational Dyck Paths in the Non Relatively Prime Case

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Abstract

We study the relationship between rational slope Dyck paths and invariant subsets in
Z, extending the work of the first two authors in the relatively prime case. We also find a
bijection between (dn, dm)–Dyck paths and d-tuples of (n, m)-Dyck paths endowed with
certain gluing data. These are first steps towards understanding the relationship between
the rational slope Catalan combinatorics in non relatively prime case and the geometry of
affine Springer fibers and representation theory.

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