

# Tropical Representations and Identities of Plactic Monoids

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Plactic monoids are infinite, finitely generated monoids arising from a natural combinatorial multiplication on semistandard Young tableaux. Introduced by Knuth and systematically studied by Lascoux and Schützenberger, they have many applications in algebraic combinatorics. I shall discuss a recent discovery, made jointly with Marianne Johnson, of faithful representations of these monoids by matrices over the tropical semiring. The existence of such representations (which answers a question of Izhakian) implies that plactic monoids satisfy non-trivial semigroup identities (which was a conjecture of Kubat and Okniński).