Rational Shi tableaux and the skew length statistic

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Abstract

We define two refinements of the skew length statistic on simultaneous core partitions. The first one relies on hook lengths and is used to prove a refined version of the theorem stating that the skew length is invariant under conjugation of the core. The second one is equivalent to a generalisation of Shi tableaux to the rational level of Catalan combinatorics. We prove that the rational Shi tableau is injective. Moreover we present a uniform definition of the rational Shi tableau for Weyl groups and conjecture injectivity in the general case.