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**Alejandro H. Morales\*** (ahmorales@math.ucla.edu), **Igor Pak** and **Greta Panova**. *Hook formulas for skew shapes II.*

The celebrated hook-length formula of Frame, Robinson and Thrall from 1954 gives a product formula for the number of standard Young tableaux of straight shape. No such product formula exists for skew shapes. In 2014, Naruse announced a formula for skew shapes as a positive sum of products of hook-lengths using "excited diagrams" [Ikeda-Naruse, Kreiman, Knutson-Miller-Yong].

We prove Naruse's formula algebraically and combinatorially in several different ways. We exhibit a bijection between SSYTs or reverse plane partitions of skew shape and certain integer arrays that gives two  $q$ -analogues of the formula. We also give an elementary proof of the formula based on verifying it for the case of border strips. Also, we show how excited diagrams give asymptotic results for skew tableaux enumeration and uncover identities involving Euler numbers and Dyck paths. (Received August 29, 2016)