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Dongsu Kim* (dongsu.kim@kaist.edu) and **Zhicong Lin**. *A combinatorial bijection on k -noncrossing partitions.*

For any integer $k \geq 2$, we prove combinatorially the following Euler (binomial) transformation identity,

$$NC_{n+1}^{(k)}(t) = t \sum_{i=0}^n \binom{n}{i} NW_i^{(k)}(t),$$

where $NC_m^{(k)}(t)$ (resp. $NW_m^{(k)}(t)$) is the enumerative polynomial on partitions of $\{1, \dots, m\}$ avoiding k -crossings (resp. enhanced k -crossings) by number of blocks. The special $k = 2$ and $t = 1$ case, asserting the Euler transformation of Motzkin numbers are Catalan numbers, was discovered by Donaghey 1977. The result for $k = 3$ and $t = 1$, arising naturally in the recent study of pattern avoidance in ascent sequences and inversion sequences, was proved only analytically. (Received September 26, 2017)