1077-05-2450 **Miles Eli Jones*** (`mej005@ucsd.edu`), 9500 Gilman Dr. #0112, La Jolla, CA 92093, and **Jeffrey Remmel** (`jremmel@ucsd.edu`), 9500 Gilman Dr. #0112, La Jolla, CA 92093. *Consecutive Matches in Permutations and cycle structures of permutations.*

Let $\tau \in S_m$. A permutation $\sigma = \sigma_1 \ldots \sigma_n \in S_n$ has a τ-match at position i if $\sigma_i \ldots \sigma_{i+m-1}$ has the same relative order as τ. A cycle $C = (\sigma_0, \ldots, \sigma_{n-1}) \in S_n$ has a cycle-τ-match at position i if $\sigma_i \ldots \sigma_{i+m-1}$ has the same relative order as τ with the subscripts taken mod n. Let $\mathcal{NM}_n(\tau)$ be the the set of all σ in S_n that have no τ-matches. Let $\mathcal{NCM}_n(\tau)$ be the the set of all σ in S_n that have no cycle-τ-matches within any of the cycles.

Consider the generating functions

$$NM_\tau(t, y, x) = \sum_{n \geq 0} \frac{t^n}{n!} \sum_{\sigma \in \mathcal{NM}_n(\tau)} y^{1+\mathrm{des}(\sigma)} x^{\mathrm{Lmin}(\sigma)}$$

$$NCM_\tau(t, y, x) = \sum_{n \geq 0} \frac{t^n}{n!} \sum_{\sigma \in \mathcal{NCM}_n(\tau)} y^{\mathrm{cdes}(\sigma)} x^{\mathrm{cyc}(\sigma)}.$$

For $\sigma \in S_n$, $\mathrm{des}(\sigma)$ is the number of descents, $\mathrm{Lmin}(\sigma)$ is the number of left-to-right minima, $\mathrm{cdes}(\sigma)$ is the number of descents of each cycle, and $\mathrm{cyc}(\sigma)$ is the number of cycles.

We discuss why these generating functions are equal when τ starts with 1 and give some results for families of patterns that start with 1. (Received September 22, 2011)