

1135-05-1565

Younghwan Kim* (younghwan.kim.2@asu.edu). *Cyclic Sieving Phenomenon on Matchings*. Preliminary report.

Reiner-Stanton-White defined the cyclic sieving phenomenon (CSP) associated to a finite cyclic group action on a finite set and a polynomial. Sagan observed the CSP on the set of non-crossing matchings on $[2n] := \{1, 2, \dots, 2n\}$ using the cyclic group C_{2n} generated by a cyclic shift of order $2n$ and the q -Catalan polynomial $X(q) = \frac{1}{[n+1]_q} [2n]_q$. Bowling-Liang presented a similar result on the set of one-crossing matchings with a completely different proof. In this talk, we focus on the set P_n of all matchings on $[2n]$. We find recursions for the number of elements in P_n fixed by $\frac{2\pi}{d}$ rotations for $d|2n$. We find the polynomial $X_n(q)$ such that P_n together with $X_n(q)$ and C_{2n} exhibits the CSP. (Received September 23, 2017)