1134-05-130   **Connor Thomas Ahlbach*** (`c_ahlbach@yahoo.com`), 1901 NE 85th St., Apt. #311, Seattle, WA 98115, and **Josh Swanson**. *Refined Cyclic Sieving on Words for the Major Index Statistic.*

Reiner-Stanton-White defined the cyclic sieving phenomenon (CSP) associated to a finite cyclic group action and a polynomial. A key example arises from the length generating function for minimal length coset representatives of a parabolic quotient of a finite Coxeter group. In type A, this result can be phrased in terms of the natural cyclic action on words of fixed content. There is a natural notion of refinement for many CSP's. We formulate and prove a refinement, with respect to the major index statistic, of this CSP on words of fixed content by also fixing the cyclic descent type. The argument presented is completely different from Reiner-Stanton-White's representation-theoretic approach. It is combinatorial and largely, though not entirely, bijective in a sense we make precise with a "universal" sieving statistic on words, "flex". A building block of our argument involves cyclic sieving for shifted subset sums, which also appeared in Reiner-Stanton-White. We give an alternate, largely bijective proof of a refinement of this result by extending some ideas of Wagon-Wilf. (Received August 29, 2017)