1027-05-183 **Drew Armstrong*** (armstron@math.umn.edu), School of Mathematics, U of Minnesota, 127 Vincent Hall, 206 Church St. SE, Minneapolis, MN 55455. *Fuss-Catalan combinatorics for finite Coxeter groups.*

In the presenter's thesis, a generalization $NC^{(k)}(W)$ of the lattice of noncrossing partitions has been defined for each finite Coxeter group W and positive integer k. When $k = 1$, this coincides with the lattice $NC(W)$ recently defined by Brady-Watt and Bessis. When W is the symmetric group, we obtain the poset of k-divisible noncrossing partitions, first studied by Edelman.

It turns out that the poset $NC^{(k)}(W)$ has beautiful enumerative formulas expressed in the degrees of the group W. The poset, together with the generalized nonnesting partitions of Athanasiadis and the generalized cluster complex of Fomin and Reading, suggests a new algebraic theory of "Fuss-Catalan combinatorics". This subject has inspired much recent work and it offers several exciting open problems. (Received February 26, 2007)