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Anna Ying Pun* (annapuning@gmail.com), 2300 Walnut Street, Riverloft Apt, Apt 219, Philadelphia, PA 19103. *On Decomposition of the product of two key polynomials into Demazure atoms*. Preliminary report.

A Demazure sigma-atom is defined as the sum of the weights of semi-standard augmented fillings (SSAF) with basement sigma. In particular, if sigma is the identity, it is the Demazure atom and it is the Demazure character (key) if sigma is the “inverse-identity”. We study the relations between the Demazure sigma-atoms and the Demazure atoms and characters, and also the generalization of the known results related to the atoms and characters. Furthermore, it is known that the product of a key with a partition shape (equivalent to a Schur polynomial) and a key can be decomposed as a positive sum of all Demazure characters and hence atoms. We try to generalize this decomposition by replacing characters into sigma-atoms. In particular, we try to generalize the decomposition by replacing characters into sigma-atoms. This in turn can decompose the product of keys into positive sum of atoms.

Since a Schubert polynomial is a positive sum of keys, the product of two Schubert polynomials can be written as a positive sum of products of keys, each of which is conjectured to be a positive sum of atoms.

The poster focuses on the framework on our project which is still in progress. (Received August 13, 2015)