

1011-05-256

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1600 Woodland Road, Abington, PA 18901. *Gelfand-Tsetlin bases and association  
schemes*. Preliminary report.

Recently the representation theory of the symmetric group has been explained by Vershik and Okounkov in terms of Young-Jucys-Murphy elements and Gelfand Tsetlin bases. These elements of the group algebra of  $S_n$  are defined in terms of sums of involutions as follows:

$$X_0 = 0, X_1 = (12), \dots, X_i = (1i) + (2i) + \dots + ((i-1)i), \dots$$

Although the elements  $\{X_i\}$  are not in the center of  $\mathbb{C}S_n$  they form a commutative algebra. Now the representation theory of any group is usually presented in terms of the class algebra, which as is well-known forms a commutative coherent configuration. I will explore the relationship between the two approaches and generalizations to arbitrary association schemes. (Received August 29, 2005)