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Vitaly Tarasov* (vt@math.iupui.edu), Department of Mathematical Sciences, IUPUI, 402 N. Blackford Street, Indianapolis, IN 46202-3216. *Bethe subalgebras of the group algebra of the symmetric group.*

I will introduce families of maximal commutative subalgebras, called Bethe subalgebras, of the group algebra $\mathbb{C}[S_n]$ of the symmetric group. The Bethe subalgebras depend on $n+1$ complex parameters z_1, \dots, z_n, \hbar , and are deformations of the Gelfand-Zetlin subalgebra of $\mathbb{C}[S_n]$. The latter can be recovered from the Bethe subalgebras in the limit $z_a/z_{a+1} \rightarrow 0$ for all $a = 1, \dots, n-1$, and $\hbar/z_1 \rightarrow 0$.

The definition of Bethe subalgebras is motivated by the study of algebras of integrals of motion of quantum integrable models — the Gaudin model and the XXX-type spin chain, associated with the Lie algebra \mathfrak{gl}_N .

I will describe various properties of Bethe subalgebras including their geometric models as commutative algebras, and sets of generators which are counterparts of the Young-Jucys-Murphy elements in $\mathbb{C}[S_n]$. Surprisingly, relations for those generators of Bethe subalgebras involve the Baker-Akhiezer function on the Calogero-Moser space. (Received September 22, 2010)