FINITE QAUNTUM HYPERGROUPS

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Abstract: Let G be a finite group and H a subgroup. The set $\mathcal{G}$ of double cosets HpH, with $p \in G$ has the structure of an hypergroup. The product of two elements HpH and HqH is the set of cosets HrH where $r \in pHq$. The algebra A of functions on $\mathcal{G}$ is the space of functions on G that are constant on double cosets. It carries a natural coproduct, dual to the product, and given by

$$\Delta(p,q) = \frac{1}{n} \sum_{h \in H} f(phq)$$

where n is the number of elements in H. The dual algebra is known as the Hecke algebra associated with the pair G, H.

In this talk I will explain what a finite *quantum hypergroup* is and discuss the duality for finite quantum hypergroups. In particular, I will discuss the difference between a left integral and a left invariant functional.

I will illustrate this with an example, coming from bicrossproduct theory, constructed from a pair of finite subgroups H and K of a group G, with the assumption that the map $H \cap K = \{e\}$.

This is part of a more general work in progress with M. Landstad (Trondheim - Norway).