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*Maschke's Theorem for Table Algebras*

We give a generalization of the averaging argument for Maschke's theorem in the setting of table algebras (aka. fusion rings). Table algebras are algebras with involution over $\mathbb{C}$ with finite basis $B$ that contains $1$, is $*-$closed, has non-negative real structure constants $\{\lambda_{bcd} : b, c, d \in B\}$ given by $bc = \sum_d \lambda_{bcd} d$ , and satisfies the $\underline{pseudo-inverse\ condition}$: $\lambda_{bc1} > 0 \iff c = b^*$, and $\lambda_{b*b1} = \lambda_{bb*1}$. When F is a field with (possibly trivial) involution $^-$containing the structure constants $\{\lambda_{bcd} : b, c, d \in B\}$, then $FB$ becomes an $F$-algebra with involution defined by

$$\left(\sum_{b\in B} \alpha_b b\right)^* = \sum_{b\in B} \bar{\alpha}_b b^*.$$

This version of Maschke's theorem gives sufficient conditions on the characteristic of the field $F$ for $FB$ to be a semisimple algebra, in terms of arithmetic properties of the table algebra basis $B$.