COMMUTATORS FROM A HYPERPLANE OF MATRICES

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Abstract. Denote by $M_n(K)$ the algebra of $n$ by $n$ matrices with entries in the field $K$. A theorem of Albert and Muckenhoupt states that every trace zero matrix of $M_n(K)$ can be expressed as $AB - BA$ for some pair $(A, B) \in M_n(K)^2$. Assuming that $n > 2$ and that $K$ has more than 3 elements, it is proved that the matrices $A$ and $B$ can be required to belong to an arbitrary given hyperplane of $M_n(K)$.

Key words. Commutator, Trace, Hyperplane, Matrices.

AMS subject classifications. 15A24, 15A30.