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***Module homomorphisms associated with Banach algebras.***

ABSTRACT. Let  $A$  be a Banach algebra. In this paper, among the other things, we present a few results in the theory of homomorphisms on  $A^*$ . We want to find out when the equality  $T(af) = aT(f)$  for every  $a \in A$  and  $f \in A^*$  implies the equality  $T(Ff) = FT(f)$  for every  $f \in A^*$  and  $F \in A^{**}$ . The purpose of this paper is to give a characterization of some operators  $T$  from  $A^{**}$  into  $A^*$  that satisfy  $T(FG) = FT(G)$  for all  $F, G \in A^{**}$ . Also for some Banach algebras  $A$ , we prove that a bounded linear map  $T : A^* \rightarrow A^*$  is  $\lambda_a^*$  for some  $a \in A$  if and only if  $T(Ff) = FT(f)$  for all  $F \in A^{**}$  and  $f \in A^*$ . One of the main results of this paper is to introduce and study the notion of a weakly almost periodic operator.