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Idempotents, topologies and ideals

A classical theorem due to Jacobs, and de Leeuw and Glicksberg, shows that a continuous representation of a topological group G on a reflexive Banach space may be decomposed into a “returning” subspace and a “weakly mixing” subspace. Furthermore, following Dye, Bergelson and Rosenblatt characterized the weakly mixing vectors as those for which the closure of the weak orbit of the vector contains zero. I wish to exhibit a generalization of these results, inspired, in part, by some work of Ruppert on abelian groups. I will exhibit a bijective correspondence between

- (1) central idempotents in the weakly almost periodic compactification of G ;
- (2) certain topologies on G ; and
- (3) certain ideals in the algebra of weakly almost periodic functions.

Given time, I will indicate some applications to Fourier-Stieltjes algebras.