

Texas A&M University  
Department of Mathematics  
Groups and Dynamics Seminar

Are unitarizable groups amenable?

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10/22/03, two parts, 2:00-2:50, 3:00-3:50, 317 Milner Hall

We give a new formulation of some of our recent results on the following problem: if all uniformly bounded representations on a discrete group  $G$  are similar to unitary ones, is the group amenable?

The discussion will involve a generalization of the class of Herz-Schur multipliers, namely the class  $M_d(G)$  which is formed of all the functions  $f: G \rightarrow \mathbb{C}$  such that there are bounded functions  $\xi_i: G \rightarrow B(H_i, H_{i-1})$  ( $H_i$  Hilbert) with  $H_0 = \mathbb{C}$ ,  $H_d = \mathbb{C}$  such that

$$f(t_1 t_2 \dots t_d) = \xi_1(t_1) \xi_2(t_2) \dots \xi_d(t_d). \quad \forall t_i \in G.$$

If time permits, we will prove that if  $G$  is a non-commutative free group, for any  $d \geq 1$ , we have

$$M_d(G) \neq M_{d+1}(G),$$

and hence there are elements of  $M_d(G)$  which are not coefficients of uniformly bounded representations.