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Deformation/Rigidity Theory Approach To A Conjecture of  
Peterson - Thom.

If  $\Gamma = F_n$  with  $n \geq 2$  (or any icc group  $\Gamma$  with  $\beta_1^{(27)}(\Gamma) > 0$ ), Peterson and Thom conjectured that any diffuse amenable subalgebra of  $L(\Gamma)$  is contained in a unique maximal one. We provide evidence in support of this by demonstrating  $L(\Gamma)$  cannot be generated by a pair of diffuse prop( $\Gamma$ ) subalgebras with diffuse intersection. by using Popa's deformation/rigidity theory.

The verification of this fact alludes to a technical analysis of  $s$ -malleable deformations which parallels an observation that can be made for  $\text{cocycles}^2$  which are inner on  $\mathbb{D}$  subgroups of  $\Gamma$ .

This is joint work with B. Hayes, D. HofS & T. Sinclair