1092-05-189 **Éva Czabarka** and **Aaron Dutle*** (`dutle@math.sc.edu`), Department of Mathematics, University of South Carolina, Columbia, SC 29208, and **Travis Johnston** and **László Székely**. *Constructing Diamond-free Posets with Markov Chains and Groups.*

The *Diamond conjecture* of Griggs and Lu asserts that the largest induced subposet of the boolean lattice that contains no *diamond* (i.e., four elements with $A < B_1, B_2 < C$) is no larger than size of the middle two levels. If the conjecture is true, it is obviously tight by taking the middle two levels as a subposet. In this talk, we present a technique for constructing diamond-free families using a Markov chain on a different poset, derived from an abelian group, which produces examples of diamond-free families on three or more levels. Many of these are asymptotically tight to the conjectured bound, giving reason for why the conjecture has been so difficult. (Received August 08, 2013)