VCU Discrete Mathematics Seminar

Minimum Majority 3-sets
in Union-Closed Families

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Wednesday, Oct. 11
1:00-1:50
4145 Harris Hall

Frankl's conjecture states that for every nonempty, union-closed finite family of finite sets there exists an element that is contained in at least half its sets. We develop a cutting-plane algorithm that uses exact rational integer programming to compute which families of sets ensure Frankl's conjecture holds for all union-closed families that contain them. This allows us to classify 3-sets in union-closed families up to isomorphism. As a result we prove the 3-sets conjecture of Morris from 2006, which states that a minimum majority number of 3-sets (with respect to the number of elements in the ground set of 3-sets) ensures Frankl's conjecture holds for all union-closed families which contain them.

For the DM seminar schedule, see:

http://www.people.vcu.edu/~dcranston/DM-seminar