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**Discrete Math Coast to Coast: Newfoundland and the West**

(Chair/Président: **Kseniya Garaschuk** (University of Victoria))

Org: **Gary MacGillivray** (University of Victoria))

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**KATHLEEN BARNETSON**, Memorial University of Newfoundland

*Searching for Class Uniformly Resolvable Partial Coverings*

The variation of the Social Golfer problem that we consider asks for optimal schedules for  $n$  golfers playing  $r$  rounds in set team sizes, in which each golfer plays with every other golfer as close as possible to the same number of times. Solutions take the form of class uniformly resolvable partial coverings. I will be discussing our method for generating schedules, measures of optimality, as well as interesting results.

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**KSENIYA GARASCHUK**, University of Victoria

*Fractional decompositions of dense graphs*

We explore the problem of decomposing a dense graph  $G$  into triangles of non-negative rational weights. By perturbing and restricting the coverage matrix of a complete graph, we obtain the decomposition under some conditions. The derived degree bound necessary to guarantee the decomposition is the result of careful estimates on the matrix norms and eigenvalues originating from associations schemes.

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**SHONDA GOSSELIN**, University of Winnipeg

*Algebraic hypergraph decompositions*

We examine edge decompositions of complete uniform hypergraphs whose parts are permuted transitively by a permutation of the vertex set. We present an algebraic method for constructing such a hypergraph decomposition which is related to the well known Paley graph construction. The construction is derived from a partition of the cosets of a group and a function from the power set of the vertex set into this group. Several examples will be constructed using different groups and we discuss the symmetry and other properties of the hypergraphs we obtain.

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**KAREN MEAGHER**, University of Regina

*Minimum number of distinct eigenvalues of a graph*

Suppose  $G$  is a graph with vertex set  $V = \{1, 2, \dots, n\}$ . Associate to  $G$  the collection of real symmetric matrices defined by

$$S(G) = \{A : A = A^T, \text{ for } i \neq j, a_{ij} \neq 0 \Leftrightarrow \{i, j\} \text{ is an edge in } G\}.$$

If we let  $q(A)$  denote the number of distinct eigenvalues of  $A$ , then for a graph  $G$  we define

$$q(G) = \min\{q(A) : A \in S(G)\}.$$

In this talk I will present some preliminary work that was done with the Discrete Math Research Group at the University of Regina on  $q(G)$ .

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**BILL SANDS**, University of Calgary

*Covering with intervals in distributive lattices*

I will present a recent result, due jointly with Dwight Duffus, on covering certain regions of distributive lattices by intervals.