

BRAINSTORMING SESSION

- (1) Generalization of criticality/medial graphs to non CP graphs.
- (2) General topological properties of graphs and their relations with recoverability.
- (3) Is there an analogue of medial graphs for higher genus graphs?
- (4) Relationship between quotient module (#5 from David's list):

$$\frac{\{\mathbb{Q}/\mathbb{Z}\text{-valued functions}\}}{\{\text{those arising from } \mathbb{Q}\text{-valued functions}\}}.$$
- (5) Is there a relationship between automorphisms of a graph and harmonic functions on it?
- (6) Further explore the algebraic structure of layerable graphs.
- (7) Can Jacob's results be generalized to Cayley Graphs?
- (8) Chromatic polynomial of hypergraphs.
- (9) Space of harmonic functions when conductances are in a ring R and potentials and currents in an R -module. Explore what $N-1$ means in this setting.
- (10) Larger circular-annular networks.
- (11) Other David topics.
- (12) (Jim drew some pictures)
- (13) In regards to Jacob's presentation:
 - (a) Probabilistic analysis of plane animals.
 - (b) Estimating $R(G)$.
 - (c) What happens at p_c ?
- (14) What happens when putting things other than $\mathbb{R}^+$ on electrical networks. For instance, general properties of solutions and possible physical interpretations.
- (15) How can the mind control trick be changed so the trick isn't guaranteed to eventually work.
- (16) How long for all of the frogs in the frog model to wake up on various graphs?
- (17) Make interesting, or compelling stochastic music.
- (18) Modeling nanopore sequencing (in novel ways).
- (19) Percolation with mind control.
- (20) Further exploration of the Johnny Appleseed random walk. (ask Carlos or Matt about it.