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Lifting Automorphisms of Finite Graphs

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Cheryl Praeger's normal quotient method has made the study of certain families of finite graphs (for instance, s -arc transitive and locally s -arc transitive graphs) more approachable by dividing the problem into two parts:

- (I) Study the "basic graphs," those graphs in the family that are not covers of anything but "trivial" graphs;
- (II) Study the covers of the basic graphs.

While (I) has been studied extensively, not much work has been done toward (II).

In this talk, I will discuss how voltage graphs can be used to find covers of graphs where certain symmetries "lift," and specifically look at the problem of determining the locally 2-arc transitive covers of $K_{2,3}$. I will also demonstrate how the software GAP can be applied to problems like this.

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