The Structure of Clawfree Graphs. I.

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Abstract. A graph is *clawfree* if no induced subgraph is isomorphic to the complete bipartite subgraph $K_{1,3}$. Clawfree graphs generalize line graphs, and it has been an open question how much more general they are. In joint work with Maria Chudnovsky, we have found a structure theorem which answers this, a complete description of clawfree graphs. We prove they are all built starting from line graphs, circular interval graphs, subgraphs of the Schläfli graph, and a few other basic graphs, by piecing them together in prescribed ways.

The structure of a clawfree graph, and the proof accordingly, depends heavily on the size of the largest stable set in the graph. In this talk we focus on graphs with stable set of size 3, and describe part of the proof for that case.

On Infinite Cycles in Graphs – or How to Make Graph Homology Interesting

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Abstract. Finite graph homology may be trivial, but for infinite graphs things become interesting. We present a new approach that builds the cycle space of a graph not on its finite cycles but on its topological *circles*, the homeomorphic images of the unit circle in the space formed by the graph together with its ends.

Our approach permits the extension to infinite graphs of standard results about finite graph homology – such as Tutte's generating theorem, Whitney's duality theorem, MacLane's planarity criterion, the Tutte/Nash-Williams tree packing theorem – whose infinite versions would otherwise fail. A notion of end degrees motivated by these results opens up new possibilities for an 'extremal' branch of infinite graph theory.

Numerous open problems are suggested – including a special one reserved for NR, his school, and his Friends and Relations.