

# Joint Combinatorics and Number Theory Seminar

Tuesday, September 26th, 2023

4:30-5:30pm in Hume 321

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## Neumaier graphs

### ABSTRACT

A *Neumaier graph* is an edge-regular graph with a regular clique. Several families of strongly regular graphs (but not all of them) are indeed Neumaier, but in 1981 it was asked whether there are Neumaier graphs that are not strongly regular. This question was only solved a few years ago by Greaves and Koolen, so now we know there are so-called *strictly* Neumaier graphs.

In this talk I will discuss several new results on (strictly) Neumaier graphs, including bounds on the parameters and (non)-existence results obtained in various ways. I will focus on a new construction (involving Cayley graphs) producing an infinite number of strictly Neumaier graphs, but I will also discuss a new Neumaier graph arising from a Latin square. This talk is based on joint research with A. Abiad, W. Castryck, J.H. Koolen and S. Zeijlemaker.

Keywords: edge-regular graphs, regular clique, Cayley graphs