Computing Cages: A Survey of Computational Methods for the Cage Problem

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Abstract

The cage problem has provided a variety of entertaining computational problems. In this talk we survey the state of the art from the programmer's perspective. Some general computer methods for constructing graphs with specified properties will be outlined. Findings that result from applying these methods to the cage and degree/diameter problems will be discussed.

A few new lower bounds for specific instances of the problem will be given. One of these *almost* leads to a new cage. In this case, we describe the missing pieces of an argument that might lead to the determination of the cage.

Finally, we discuss a problem in which nobody other than the speaker has ever expressed an interest: what is the maximum girth of a cubic graph that can be constructed on a computer?