

Moore cages of girth 8

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Abstract: In this talk we explain some problems related with graphs called *cages* of girth 8. These graphs are regular, have girth 8, and have the least possible number of vertices. The lower bound on this value is easy to obtain, and the cages with order equal to the lower bound are called *Moore cages of girth 8*. We will give an algebraic description of Moore $(q + 1, 8)$ -cages, where $q \geq 2$ denotes a prime power. Starting of this description we will explain how to obtain graphs of girth 8 and degrees q or $q - 1$ having the minimum number of vertices known until now. Also the algebraic description of Moore $(q + 1, 8)$ -cages allows us to obtain k -regular graphs of girth 7 having the minimum number of vertices known until now.