1060-05-91 **Dominique Buset*** (dbuset@ulb.ac.be), Université Libre de Bruxelles, Service Beams CP165/14, 50 Avenue F. Roosevelt, B-1050, Bruxelles, Belgium. *Applications of the Cayley graphs to the Degree/Diameter Problem.*

The construction of large interconnection or microprocessor networks gave rise to the "degree/diameter problem" also called "(Δ, D)-graph problem": given two positive integers Δ and D, construct a connected (Δ, D)-graph (i.e. a graph of degree Δ and diameter D) with maximum number of vertices. The largest integer n such that there exists a (Δ, D)-graph with n vertices will be denoted by $n(\Delta, D)$. Since the 1960's the (Δ, D)-graph problem has been studied by many authors but very little is known about the exact values of $n(\Delta, D)$. Upper bounds for $n(\Delta, D)$ are given by Moore in 1958 and by Bannai and Ito in 1981. For $\Delta \geq 3$ and $D \geq 2$, only six maximal (Δ, D)-graphs are know. Most of the recent results concern effective constructions of large (Δ, D) -graphs. Many of them use Cayley graphs. In this talk, we give a survey of what is known about this problem with some last improvements and provide many open problems which can give rise to further research in the field of construction of large interconnection networks. (Received March 23, 2010)