

# The non existence of a Mixed Moore graph of order 486

Nacho López, Jordi Pujolàs.

Departament de Matemàtica  
Universitat de Lleida  
Jaume II 69, 25001 Lleida, Spain  
{nlopez,jpujolas}@matematica.udl.cat

## Abstract

Mixed graphs of order  $n$  such that for any pair of vertices there is a unique trail of length at most  $k$  between them are known as mixed Moore graphs. These extremal graphs may only exist for diameter  $k = 2$  and some (infinitely many) values of  $n$ . In this talk we characterize mixed Moore graphs of directed degree one. In particular, we prove the non-existence of a mixed Moore graph of order 486 which is equivalent to saying that a directed strongly regular graph with parameters  $(486, 22, 1, 0, 21)$  does not exist.