1050-05-108 **Leif K Jorgensen*** (`leif@math.aau.dk`), Department of Mathematical Sciences, Aalborg University, Fr. Bajers Vej 7G, 9220 Aalborg, Denmark. *Directed quotient graphs of bipartite graphs.*

We consider two cases of bipartite graphs with a partition such that the quotient graph is a normally regular digraph, i.e., a directed graph with adjacency matrix A satisfying $AA^{\mathrm{t}} = kI + \lambda(A + A^{\mathrm{t}}) + \mu(J - I - A - A^{\mathrm{t}})$. It is necessary that two vertices that are in the same cell of the partition and also in the same bipartition class have the same number of neighbours in each of the cells.

The first case is an $(r+1)$-regular bipartite graph with $2(r^2 + r)$ vertices, diameter 3 and a partition in 4-cycles. This is the largest possible bipartite graph with diameter 3 if a projective plane of order r does not exist. This is joint work with Delorme, Miller and Pineda-Villavicencio.

In the second case we consider partitions of (incidence graphs of) projective planes in subplanes. Such "ordinary" partitions have also been considered by Fossorier, Ježek, Nation and Pogel. They used this idea in an attempt to construct new projective planes. I will consider construction of new normally regular digraphs from known projective planes. (Received March 01, 2009)