1011-05-155 **Stefko Miklavic*** (`miklavic@pef.upr.si`), Faculty of Education, Cankarjeva 5, 6000 Koper, Slovenia. *On bipartite Q-polynomial distance-regular graphs.*

Let G denote a bipartite Q-polynomial distance-regular graph with vertex set X and diameter $D \geq 3$. Let V denote the vector space over real numbers consisting of column vectors with real entries and rows indexed by X. For $z \in X$, let $\hat{z}$ denote the vector in V with a 1 in the z-coordinate, and 0 in all other coordinates. Fix $x, y \in X$ such that $d(x, y) = 2$. For $0 \leq i, j \leq D$ we define $w_{ij} = \sum \hat{z}$, where the sum is over all $z \in X$ such that $d(x, z) = i$ and $d(y, z) = j$. We define $W = \text{span}\{w_{ij} \mid 0 \leq i, j \leq D\}$. In this talk we consider the space $MW = \text{span}\{mw \mid m \in M, w \in W\}$, where M is the Bose-Mesner algebra of G. We obtain our results about MW using Terwilliger's "balanced set" characterization of the Q-polynomial property.

Finally, let $\theta_0, \theta_1, \cdots, \theta_D$ denote the Q-polynomial ordering of the eigenvalues of G. It is well known that this sequence satisfies

$$\theta_{i-1} + \theta_{i+1} = \beta\theta_i \qquad (1 \leq i \leq d-1)$$

for some real scalar β. Let q denote a complex scalar such that $q + q^{-1} = \beta$. Using the idea of Terwilliger we give $q + q^{-1}$ as a simple rational expression involving the intersection numbers and some other combinatorial coefficients. (Received August 24, 2005)