

**Pascasio, Arlene A.**

**Tight graphs and their primitive idempotents.** (English) Zbl 0927.05085  
*J. Algebr. Comb.* 10, No. 1, 47-59 (1999).

Let  $\Gamma$  be a distance-regular graph with diameter  $d \geq 3$  and eigenvalues  $\theta_0 > \theta_1 > \dots > \theta_d$ . Then

$$\left(\theta_1 + \frac{k}{a_1 + 1}\right) \left(\theta_d + \frac{k}{a_1 + 1}\right) \geq \frac{-ka_1 b_1}{(a_1 + 1)^2}.$$

$\Gamma$  is said to be tight whenever  $\Gamma$  is not bipartite and equality holds above. Suppose  $E$  and  $F$  are nontrivial primitive idempotents of  $\Gamma$  and the entry-wise product  $E \circ F$  is a scalar multiple of a primitive idempotent  $H$  of  $\Gamma$ . Then  $\Gamma$  is either bipartite and at least one of  $E, F$  is equal to  $E_d$  or tight and  $\{E, F\} = \{E_1, E_d\}$  (in last case the eigenvalue associated with  $H$  is  $\theta_{d-1}$  and  $k\theta_{d-1} = \theta_1\theta_d$ ).

Reviewer: [A.A.Makhnev \(Ekaterinburg\)](#)

**MSC:**

**05E30** Association schemes, strongly regular graphs

Cited in **2** Reviews  
Cited in **14** Documents

**Keywords:**

tight graph; primitive idempotent; Krein parameter; distance regular graph; eigenvalues

**Full Text:** [DOI](#)

**References:**

- [1] E. Bannai and T. Ito, *Algebraic Combinatorics I: Association Schemes*, Benjamin-Cummings Lecture Note Ser. 58, Benjamin-Cummings, Menlo Park, CA, 1984.
- [2] A.E. Brouwer, A.M. Cohen, and A. Neumaier, *Distance-Regular Graphs*, Springer, New York, 1989. · [Zbl 0747.05073](#)
- [3] C.D. Godsil, *Algebraic Combinatorics*, Chapman and Hall, New York, 1993.
- [4] A. Jurišić, J. Koolen, and P. Terwilliger, "Tight distance-regular graphs," submitted. · [Zbl 0959.05121](#)

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.