

**Brouwer, A. E.**

**Toughness and spectrum of a graph.** (English) [Zbl 0833.05048](#)  
*Linear Algebra Appl.* 226-228, 267-271 (1995).

The author proves the following theorem: Let  $G$  be a connected non- complete regular graph of valency  $d$  and let  $\lambda$  be the maximum of the absolute values of the eigenvalues of  $G$  distinct from  $d$ . Then the toughness  $t$  of  $G$  satisfies  $t > d/\lambda - 2$ .

Reviewer: [B.Andrásfai \(Budapest\)](#)

**MSC:**

[05C35](#) Extremal problems in graph theory  
[05C50](#) Graphs and linear algebra (matrices, eigenvalues, etc.)

Cited in **3** Reviews  
Cited in **11** Documents

**Keywords:**

eigenvalues; toughness

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

**References:**

- [1] Alon, N., Tough Ramsey graphs without short cycles, (1993), Preprint · [Zbl 0826.05039](#)
- [2] Brouwer, A.E.; Cohen, A.M.; Neumaier, A., Distance-regular graphs, (1989), Springer Heidelberg · [Zbl 0747.05073](#)
- [3] Cvetković, D.M.; Doob, M.; Sachs, H., Spectra of graphs, (1979), VEB Berlin, Academic, New York, 1980
- [4] Haemers, W.H., Eigenvalue techniques in design and graph theory, (1980), Reidel Dordrecht · [Zbl 0429.05013](#)
- [5] Haemers, W.H., Interlacing eigenvalues and graphs, *Linear algebra appl.*, 226-228, 593-616, (1995) · [Zbl 0831.05044](#)
- [6] van den Heuvel, J., Degree and toughness conditions for cycles in graphs, () · [Zbl 0840.05046](#)

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.