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**The diameter and radius of radially maximal graphs.** (English) [Zbl 07394384]


**Summary:** A graph is called radially maximal if it is not complete and the addition of any new edge decreases its radius. *F. Harary* and *C. Thomassen* [Math. Proc. Camb. Philos. Soc. 79, 11–18 (1976; Zbl 0319.05128)] proved that the radius $r$ and diameter $d$ of any radially maximal graph satisfy $r \leq d \leq 2r - 2$. *R. D. Dutton et al.* [Linear Algebra Appl. 217, 67–82 (1995; Zbl 0820.05020)] rediscovered this result with a different proof and conjectured that the converse is true, that is, if $r$ and $d$ are positive integers satisfying $r \leq d \leq 2r - 2$, then there exists a radially maximal graph with radius $r$ and diameter $d$. We prove this conjecture and a little more.

**MSC:**

05C12 Distance in graphs

05C35 Extremal problems in graph theory

**Keywords:**

diameter; eccentricity; radially maximal graph; radius

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**References:**


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