Erratum: Sphericity, Cubicity, and Edge Clique Covers of Graphs

T. S. Michael and Thomas Quint

Mathematics Department, United States Naval Academy, Annapolis, MD 21402

Department of Mathematics and Statistics, University of Nevada, Reno, NV 89557

June 2009

There is an error in the paper by Michael and Quint [2]. Theorem 4 erroneously asserts that the cubicity of a non-empty graph G does not exceed its edge clique cover number: $\mathrm{cub}(G) \leq \theta(G)$. The argument given shows that the p-sphericity of G satisfies $\mathrm{sph}_p(G) \leq \mathrm{cub}(G)$. Thus the first inequality in the last line of the proof is reversed, invalidating Theorem 4.

We are grateful to Michael Cavers, who brought to our attention the following counterexamples to Theorem 4. Let G be the complete multipartite graph $K(2, 2, \ldots, 2)$ on $2n$ vertices. Roberts [3] showed that the cubicity of G is n, while Gregory and Pullman [1] showed that $\lim_{n\to\infty} \theta(G)/\log_2 n = 1$. Therefore the inequality of Theorem 4 is violated for all sufficiently large n.

References

[1] D.A. Gregory and N. Pullman, On a clique covering problem of Orlin, *Discrete Math.,* **41** (1982), 97–99.

[2] T.S. Michael and T. Quint, Sphericity, cubicity, and edge clique covers of graphs, *Discrete Applied Math.,* **154** (2006) 1309-1313.

[3] F.S. Roberts, On the boxicity and cubicity of a graph, *Recent Progress in Combinatorics.* (Proc. Third Waterloo Conf. on Combinatorics, 1968), pp 301-310. Academic Press, New York, 1969.