

*Open problem***Benzenoid graphs with equal maximum eigenvalues**

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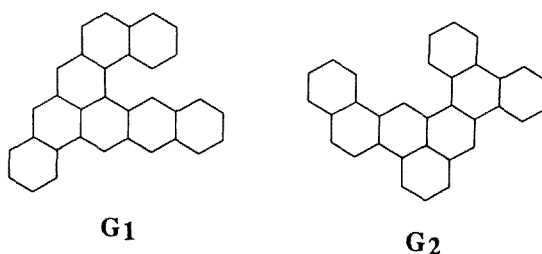
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Recently Gutman and Marković [1] posed two open problems concerning benzenoid graphs with equal maximum eigenvalues. Here we provide answer to the first of these two problems. Gutman and Marković stated the following problem: "Prove or disprove that G_1 and G_2 have equal maximum eigenvalues". Benzenoid graphs G_1 and G_2 are depicted in fig. 1.

Fig. 1. Benzenoid graphs G_1 and G_2 with eight rings.

The authors stated that according to their calculation the maximum eigenvalues of G_1 and G_2 could be equal. Since we are in a position to carry out the diagonalization of the adjacency matrix to high accuracy, we found the answer: Benzenoid graphs G_1 and G_2 do *not* possess equal maximum eigenvalues. The calculated maximum eigenvalues are as follows:

$$\chi_{\max}(G_1) = 2.6369724379565793242087106873803083111541 \text{ and}$$

$$\chi_{\max}(G_2) = 2.6369724369094896734421158581663075141815.$$

Reference

- [1] I. Gutman and S. Marković, *J. Math. Chem.* 13 (1993) 213.