

# On the diameter and some related invariants of fullerene graphs

(Talk)

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(joint work with Vesna Andova, Matjaž Krnc, Borut Lužar and Riste Škrekovski)

Fullerene graphs are 3-connected 3-regular planar graphs with only pentagonal and hexagonal faces. We show that the diameter of a fullerene graph  $G$  of order  $n$  is at least  $(\sqrt{24n-15}-3)/6$  and at most  $n/5+1$ . Moreover, if  $G$  is not a  $(5,0)$ -nanotube, its diameter is at most  $n/6+5/2$ . As a consequence, we improve the upper bound on the saturation number of fullerene graphs. We also report an improved lower bound on the independence number and an upper bound on the smallest eigenvalue of fullerene graphs, confirming some conjectures for large fullerene graphs.

MSC2010: 05C12, 92E10.

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