

Monochromatic cycles and the monochromatic circumference in 2-coloured graphs

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Li, Nikiforov and Schelp conjectured that a 2-edge coloured graph G with order n and minimal degree strictly greater than $3n/4$ contains a monochromatic cycle of length l , for all l at least four and at most $n/2$. We prove this conjecture for sufficiently large n and also find all 2-edge coloured graphs with minimal degree equal to $3n/4$ that do not contain all such cycles. Finally we show that, for all positive constants d and sufficiently large n , a 2-edge coloured graph G of order n with minimal degree at least $3n/4$ either contains a monochromatic cycle of length at least $(2/3+d/2)n$, or, in one of the two colours, contains a cycle of all lengths between three and $(2/3-d)n$.

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