Covering 2-edge-colored graphs with a pair of cycles

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(joint work with Luke Nelsen)

Lehel conjectured that in every 2-coloring of the edges of K_n, there is a vertex disjoint red and blue cycle which span $V(K_n)$. Łuczak, Rödl, and Szemerédi proved Lehel's conjecture for large n, Allen gave a different proof for large n, and finally Bessy and Thomassé gave a proof for all n. Balogh, Barát, Gerbner, Gyárfás, and Sárközy proposed a strengthening of Lehel's conjecture where K_n is replaced by any graph G with $\delta(G) \geq 3n/4$, and they proved an approximate version of their conjecture. We prove that their conjecture holds for sufficiently large n..