APPROXIMATE CYCLE DOUBLE COVER

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The cycle double cover conjecture states that for every bridgeless graph G, there exists a family $\mathcal{F}$ of cycles such that each edge of the graph is contained in exactly two members of $\mathcal{F}$. Given an embedding of a graph G, an edge e is called a **bad edge** if it is visited twice by the boundary of one face. CDC conjecture is equivalent to bridgeless cubic graphs having an embedding with no bad edge. In this talk, we introduce non-trivial upper bounds on the minimum number of bad edges in an embedding of a cubic graph. We also introduce better upper bounds on the minimum number of bad edges in an embedding of cyclically $2k$-edge-connected and cyclically k-edge-connected cubic graphs. Finally, we introduce another approach to the CDC conjecture. Every embedding allows us to make a dual graph. The embedding gives a CDC if the dual graph has no loop. We are studying how to modify the embedding of a cubic graph by doing controlled modifications of the dual graph. The goal of that is to find a dual with a small number, or ideally no loop edge.