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Robertson conjectured that the only 3-connected internally-4-connected graph of girth 5 in which every odd cycle of length greater than 5 has a chord is the Petersen graph. We provided a counterexample to Robertson's conjecture in an earlier paper. However, we are able to show that Robertson's conjecture is true for many graphs, and any counterexample to Robertson's Conjecture must possess a rather specific structure.

In this talk, we prove a weaker version of Robertson conjecture. We show that if a graph G satisfies the above mentioned properties, then either G is the Petersen graph, or for any 5-cycle C of G , G contains a subgraph that contains C and is isomorphic to the Petersen graph with two edges at distance 2 subdivided. This shows that if G is not the Petersen graph, then for every girth cycle C in G , there is a subgraph H of G which contains C and that is "close to" the Petersen graph. (Received December 03, 2012)