On even cycle decompositions
of 4-regular line graphs

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(joint work with Ján Mazák)

We prove that the Petersen colouring conjecture implies a conjecture of Markström saying that the line graph of every bridgeless cubic graph is decomposable into cycles of even length. In addition, we describe two infinite families of 4-regular graphs: the first family consists of 3-connected graphs with no even cycle decomposition and the second one consists of 4-connected signed graphs with no even cycle decomposition.