LDPC codes from cubic semisymmetric graphs

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A regular graph is semisymmetric if it is edge-transitive but not vertex-transitive. A cubic semisymmetric graph is a 3-regular graph which is semisymmetric. It has been proved that every semisymmetric graph is necessarily bipartite graph. In this talk we study low-density parity-check (LDPC) codes having cubic semisymmetric graphs as their Tanner graphs. We will discuss some of the properties of the constructed codes and present bounds for the code parameters: code length, dimension and minimum distance. Further, we will discuss the structure of the smallest absorbing sets of these LDPC codes and give an expression for the variance of the syndrome weight of the constructed codes. Moreover, computational and simulation results on the constructed codes will be presented.

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