

On Cycle-free Lattices

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It has been shown that high rate codes based on cycle-free Tanner graphs have minimum distance at most 2. So cycle-free Tanner graphs cannot support good codes. This result has been extended to a class of lattices based on Construction D' only. In this talk, based on a new relationship between lattices and their corresponding label codes, we generalize those results to a larger class of lattices. Finally, we show that this class of cycle-free lattices cannot be capacity achieving.

Joint work with Amin Sakzad.