Recursion Code.

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Abstract

None

1 Construction.

Definition 1. *Let Δ be an integer greater than 2 and consider an algorithm $\mathcal{A}$ that for any n that is power of 3 construct a Δ-regular graph over n vertices. Now, let G be Δ-regular graph over n vertices generated by $\mathcal{A}$. Define the **third graph obtained by** G , labeled by $G^{\sim}$ to be the graph which $\mathcal{A}$ returns over $\frac{1}{3}n$ such that any of the edges could be associate by puncturing a $\frac{2}{3}$ fraction of the edges of each vertex.*

Definition 2. *Let $C_0 = \Delta[1, \rho_0, \delta 0]$ be a binary linear code. We will define the recursion code in recursive manner. First for a sufficiently large integer n_0, which is also power of 3, $C(n_0)$ defined to be the Tanner code defined by the C_0 and graph $\mathcal{A}(n_0)$. Then let n be any power of 3, such that $n > n_0$, denote by G the graph that constructed by the running of $\mathcal{A}(n)$. Then let $C(n)$ be the code obtained by the joining the parity check matrix of the Tanner code $\mathcal{T}(G, C_0)$ and by the checks of the $C(n/3)$ over the bits associated with the$G^{\sim}$.*