

Meeting: 1005, Newark, Delaware, SS 5A, Special Session on Designs, Codes, and Geometries

1005-05-162 **Dijen K Ray-Chaudhuri** (dijen@math.ohio-state.edu), 231 W 18th Avenue, Dept of Mathematics, The Ohio State University, Columbus, OH 43210, and **Niranjan Balachandran*** (niranj@math.ohio-state.edu), 231 W 18th Avenue, Dept of Mathematics, The Ohio State University, Columbus, OH 43210. *Rooted Forest Set Systems and Steiner Designs*. Preliminary report.

Let $F = (V, E)$ be a rooted forest X , a finite set and $\tau : X \rightarrow V(F)$, a surjective map. A Rooted Forest Set System (RFSS) on F w.r.t. X is a triple (X, τ, \mathcal{B}) if

- (1) Any $T, T \subset X, |T| = t, T \subset \cup_{v \in V(P)} \tau^{-1}(v)$ for a maximal path P of F to a root is not contained in any member of \mathcal{B} and
- (2) Every t -subset not satisfying (1) is contained in a unique member of \mathcal{B} .

RFSSs generalize the notion of Candelabra Set Systems. We describe a general recursive construction for RFSSs and define a natural closure operation for which the sets $B[K] = \{v \mid a 3 - (v, K, 1) \text{ exists}\}$ become closed sets, where $K \subset \mathbb{N} \cup \{0\}$. We explore the consequences on constructions for Steiner 3 designs. (Received February 07, 2005)