Rainbow Matchings for 3-uniform Hypergraphs

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Kühn, Osthus and Treglown, and, independently, Khan proved that if $H$ is a 3-uniform hypergraph with $n$ vertices such that $n \in 3\mathbb{Z}$ and large, and the minimum vertex degree of $H$ is greater than \(\binom{n-1}{2} - \binom{2n}{2} \), then $H$ contains a perfect matching. Huang, Loh, and Sudakov showed that if, for $1 \leq i \leq t$, where $t < n/(3k^2)$, $F_i \subseteq \binom{[n]}{k}$ and $|F_i| > \binom{n}{k} - \binom{n-t}{k}$, then \{\(F_1, \ldots, F_t\)\} admits a rainbow matching. In this paper, we show that for $n \in 3\mathbb{Z}$ sufficiently large, if, for $i \in \{1, \ldots, n/3\}$, $F_i \subseteq \binom{[n]}{3}$ and $\delta_1(F_i) > \binom{n-1}{2} - \binom{2n}{2}$, then \{\(F_1, \ldots, F_{n/3}\)\} admits a rainbow matching. This is joint work with Hongliang Lu and Xingxing Yu.