Erdos-Ko-Rado like theorems for rainbow matchings

Date Tuesday, September 27

Time 4:30 pm

Location 303 Mudd

*Abstract:*Let $f(n,k,r)$ be the smallest number such that every set of more than $f(n,k,r)$ r-sets in $[n]$ contain a matching of size k.The Erdos-Ko-Rado theorem states that $f(n,2,r) = \binom{n-1}{r-1}$. A natural conjecture is that if $F_1, F_2, ...F_k \subseteq \binom{[n]}{r}$ are all of size larger than $f(n,k,r)$ then they possess a rainbow matching, namely a choice of disjoint edges, one from each F_i. This is known for $k = 2$ (Matsumoto-Tokushige) and $r = 2$ (Meshulam).

We consider the analogue version of this conjecture in r-partite hypergraphs, and prove the cases $r = 3$ and $k = 2$.

Joint work with David Howard