

1112-05-325

**Jozsef Balogh, Theodore Molla and Maryam Sharifzadeh\*** ([sharifz2@illinois.edu](mailto:sharifz2@illinois.edu)),

Apt# 43, 612 West Church Street, Champaign, IL 61820. *On the Ramsey-Corradi-Hajnal theory.*

The classical Corrádi-Hajnal theorem states that every  $n$ -vertex graph  $G$  with  $\delta(G) \geq 2n/3$  contains a triangle factor, where  $3|n$ . In this paper we determine the minimum degree condition for graphs with sublinear independence number. In particular we show that if an  $n$ -vertex graph has sub-linear independence number then the constant  $2/3$  can be improved to  $1/2 + \epsilon$  for arbitrary small constant  $\epsilon > 0$ . Additionally, we also consider a fractional variant of Corrádi-Hajnal Theorem, settling a conjecture of Balogh-Kemkes-Lee-Young. Let  $t \in (0, 1)$  and  $w : E(K_n) \rightarrow [0, 1]$ . We call a triangle in  $K_n$  heavy if the sum of the weights of its edges is at least  $3t$ . We prove that if  $G(V, E) = K_n$  with  $n = 3k$  and  $w : E \rightarrow [0, 1]$  such that for every  $v$  the sum of  $w(e)$  for all edges  $e$  incident to  $v$  is at least  $(\frac{1+2t}{3} + o(1))n$ , then there are  $k$  vertex disjoint heavy triangles in  $G$ .

This is joint work with Jozsef Balogh and Theodore Molla (Received August 07, 2015)