A density Corrádi–Hajnal theorem

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An easy observation is that any graph of order n with minimum degree greater than $n/2$ contains at least one triangle. Mantel's theorem — a special case of Turán's theorem — shows that replacing the minimum degree with an average degree condition leads to the same conclusion. A natural question is how many triangles can we force, when we surpass this threshold. Corrádi–Hajnal theorem gives the minimum degree threshold of a graph forcing the containment of a tiling of $k+1$ triangles, i.e. the containment of $k+1$ vertex-disjoint triangles. In this talk, we will turn our attention to the average degree counterpart of this result, giving the minimum number of edges required to force the containment of a tiling of $k + 1$ triangles.

This is joint work with Peter Allen, Julia Böttcher, and Jan Hladký.