**Configuration graphs, branching processes and random forests**

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We are considering the tasks that emerge from the study of the structure and dynamics of configuration graphs. Such graphs are widely used for modeling modern complex communication networks, such as the Internet, mobile communication systems, social networks and so on. Branching process theory methods are successfully applied to the study of configuration graphs. For graphs with a growing number of vertices, crucial asymptotic properties were discovered using Galton-Watson processes. Processes starting with a few particles form Galton-Watson random forests, In the sufficiently developed random forest theory it is assumed that the distributions of the number of offspring particles of the process have finite variance. Nevetheless, in configuration graphs that model complex communication networks, the distributions of vertex degrees do not have finit second moments and include unknown slowly functions. The talk present results on configuration graphs and Galton-Watson forests under these conditions. The limit behavior of the degree and cluster structure of configuration graphs, and the asymptotic of tree sizes, vertex distributions by layers, and the height of a random forest have been investigated.