COUNTING TREES AND ROOTED TREES WITH APPLICATIONS

Abstract

Trees are connected graphs with no cycles. Rooted trees have a specific vertex designated to be the root. The order of a tree is the number of vertices. As the order increases the total number of trees or rooted trees with this order grows rapidly. A generating function for these totals will be demonstrated. The principal applications discussed in this talk are connected with the structures of Runge-Kutta methods and canonical Runge-Kutta methods.