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Andrew Vince*, University of Florida, Department of Mathematics, 358 Little Hall, PO Box 118105, Gainesville, FL 32611-8105, and **Meera Sitharam** and **Miklos Bona**. *Counting Tree Orbits Under Permutation Group Action - An Application to Viral Shell Assembly*.

Combinatorial methods (permutation groups, Möbius inversion, generating functions) are used to answer questions about the assembly of icosahedral viral shells. The main combinatorial result is the following. If G is a finite group acting on a finite set X , then there is a natural induced action of G on the set T_X of trees whose leaves are bijectively labeled by the elements of X . When G acts freely on X (each element has trivial stabilizer), a formula is obtained for the number of orbits of each size in the action of G on T_X . (Received December 08, 2010)