1050-52-52 **Bernd Schulze*** (bschulze@mathstat.yorku.ca), Department of Mathematics and Statistics, York University, 4700 Keele Street, Toronto, Ontario M3J1P3, Canada. *Symmetry as a sufficient condition for a finite flex.* Preliminary report.

A finite flex of a (bar-and-joint) framework (G,p) moves the joints of (G,p) on differentiable displacement paths while holding the lengths of all bars fixed and changing the distance between two unconnected joints. In this talk, we consider finite flexes of *symmetric* frameworks. We prove that if a framework (G,p) is 'generic' within a given symmetry class and there exists a 'fully-symmetric' infinitesimal flex of (G,p) (i.e., the velocity vectors of the infinitesimal flex remain unaltered under all symmetry operations of (G,p)), then (G,p) also possesses a 'symmetry-preserving' finite flex, i.e., a flex which displaces the joints of (G,p) in such a way that all the resulting frameworks have the same symmetry as (G,p) (or possibly higher symmetry). This and other related results are obtained by symmetrizing techniques described by L. Asimov and B. Roth in their paper 'The Rigidity Of Graphs' from 1978 and by using the fact that the rigidity matrix of a symmetric framework can be transformed into a block-diagonalized form by means of group representation theory. The finite flexes that can be detected with these symmetry-based methods can in general not be found with the analogous non-symmetric methods. (Received February 21, 2009)