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Andrej Cherkaev, Predrag Krtolica and Andrejs E Treibergs*

(treiberg@math.utah.edu), 155 S 1400 E, JWB, Salt Lake City, UT 84112. *Compatibility conditions as a measure of rigidity of discrete structures*. Preliminary report.

An elasticity model for a rigid truss often results in an overdetermined system which requires compatibility conditions on elongations to be solvable. We study how one can regard the number of compatibility conditions as a measure of rigidity. A single compatibility equation is carried by an over-rigid unit substructure. When an edge of the truss is damaged (removed), then a surrounding substructure must be enlarged to carry a compatibility equation. We show that the discrete linearized compatibility conditions limit to the continuum compatibility conditions as the grid is refined. (Received September 21, 2015)