1092-05-73 **Laszlo A. Szekely*** (szekely@math.sc.edu) and **Hua Wang** (hwang@georgiasouthern.edu).

Extremal values of ratios: distance problems vs. subtree problems in trees. Preliminary report.

The authors pointed out a dual behaviour of two tree indices, the Wiener index and the number of subtrees [*Discrete Appl. Math.* **155**2006, 374–385; *Adv. Appl. Math.* **34**(2005), 138–155]. Wagner [*SIAM J. Disc. Math.* **21**(2007), 33–46] found a large negative correlation between these quantities. Barefoot, Entringer and Székely [*Discrete Appl. Math.* **80**(1997), 37–56] determined extremal values of $\sigma_T(w)/\sigma_T(u)$, $\sigma_T(w)/\sigma_T(v)$, $\sigma(T)/\sigma_T(v)$, and $\sigma(T)/\sigma_T(w)$, where T is a tree on n vertices, v is in the centroid of the tree T, and u, w are leaves in T, and $\sigma_T(x)$ is the sum of distances from x to all other vertices of the tree. Now we test how far the negative correlation between distances and subtrees go if we look for the extremal values of $F_T(w)/F_T(u)$, $F_T(w)/F_T(v)$, $F(T)/F_T(v)$, and $F(T)/F_T(w)$, where T is a tree on n vertices, v is in the subtree core of the tree T, and u, w are leaves in T, $F(T)$ is number of subtrees of T and $F_T(x)$ is number of those containing the vertex x—the complete analogue, changing distances to the number of subtrees. The conclusion is that analogous phenomena hold for these ratios. (Received July 28, 2013)