1138-05-255 **Peter Dankelmann*** (pdankelmann@uj.ac.za), Department of Pure and Applied Mathematics, University of Johannesburg, Johannesburg, 2006, South Africa. *Steiner $k$-Wiener index and minimum degree.*

The Wiener index of a connected graph $G$ is defined as the sum of the distances between all unordered pairs of vertices of $G$. The Steiner distance of a set $S$ of vertices of a connected graph $G$ is the minimum size of a connected subgraph of $G$ containing the vertices of $S$. The Steiner distance generalises the notion of distance in graphs to more than two vertices.

The Steiner $k$-Wiener index combines these two notions. For $k \in \mathbb{N}$, the Steiner $k$-Wiener index of a graph $G$ is defined as the sum of the Steiner distances of all $k$-subsets of the vertex set of $G$. The Steiner 2-Wiener index is the Wiener index.

It is known that for $n, k \in \mathbb{N}$ with $2 \leq k \leq n$, the Steiner $k$-Wiener index of a connected graph of order $n$ cannot exceed $\frac{(k-1)(n+1)}{k+1}\binom{n}{k}$, with equality holding for paths. In our talk we show that for graphs of minimum degree $\delta$ this bound can be improved by a factor of approximately $\frac{3}{\delta+1}$, and this is best possible. (Received February 11, 2018)