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**Rachel Bass Lanning\*** ([rebass@clemons.edu](mailto:rebass@clemons.edu)). *Vertex Degrees and Chemical Indices.*

Graph invariants are functions defined on the graph structures that stay the same under taking graph isomorphisms. Many such graph invariants, including some commonly used graph indices in Chemical Graph Theory, are defined on vertex degrees and distances between vertices. We explore generalizations of such graph indices and the corresponding extremal problems in trees. We will also briefly mention the applications of our results. (Received February 09, 2018)