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**Benjamin Jerome Kraft\*** (benkraft@mit.edu). *Diameters of groups generated by transposition trees.*

Let  $G = \langle S \rangle$  be a group, and let  $\Gamma$  be its Cayley graph. Computing the diameter of  $\Gamma$  is a computationally hard problem which comes up in several contexts. Thus, it is useful to be able to compute bounds on the diameter of Cayley graphs. In Ganesan the case where  $S$  is a minimal set of transpositions which generate  $G$  is examined, and an algorithm to find an upper bound on the diameter of  $\Gamma$  without examining each permutation is exhibited. Expanding on this work, we give several new algorithms to compute upper bounds on the diameter of  $\Gamma$ , without examining individual elements of  $G$ . Some of the algorithms we give are computationally more efficient than Ganesan's; one is computationally similar but produces much tighter bounds in many cases. (Received September 19, 2012)