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Sriram Pemmaraju* (sriram@cs.uiowa.edu), Department of Computer Science, The University of Iowa, Iowa City, IA 52242, and **Aravind Srinivasan**. *The Randomized Coloring Procedure with Symmetry-Breaking*.

A basic *randomized coloring procedure* has been used in probabilistic proofs to obtain remarkably strong results on graph coloring. These results include the asymptotic version of the List Coloring Conjecture due to Kahn, the extensions of Brooks' Theorem to sparse graphs due to Kim and Johansson, and Luby's fast parallel and distributed algorithms for graph coloring. The most challenging aspect of a typical probabilistic proof is showing adequate concentration bounds for key random variables. In this paper, we present a simple symmetry-breaking augmentation to the randomized coloring procedure that works well in conjunction with *Azuma's Martingale Inequality* to easily yield the requisite concentration bounds. We use this approach to obtain a number of results in two areas: *frugal coloring* and *weighted equitable coloring*. (Received August 03, 2007)