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**Hemanshu Kaul\*** ([kaul@iit.edu](mailto:kaul@iit.edu)), Department of Applied Mathematics, Illinois Institute of Technology, Chicago, IL 60616, and **Jeffrey Mudrock**. *Criticality, List Color Function, and Chromatic-choosable Cartesian Products of Graphs*.

The list chromatic number of the Cartesian product of graphs is not well understood. The best result is by Borowiecki, Jendrol, Kral, & Miskuf (2006) who proved that the list chromatic number of the Cartesian product of two graphs can be bounded in terms of the list chromatic number and the coloring number of the factors, implying a bound exponential in the list chromatic number of the factors.

We show how the knowledge of the list color function (list coloring analogue of the chromatic polynomial) can be applied to list coloring of Cartesian products whose one factor is a strong  $k$ -chromatic choosable graph. We introduce the notion of strongly chromatic choosable graphs, that includes odd cycles, cliques, many more infinite families of graphs, and the join of a clique with any other such graph, as a strict generalization of the notion of strong critical graphs (Stiebitz, Tuza & Voigt, 2008). This leads to improved bounds on choosability of Cartesian product of certain large classes of graphs and to classes of chromatic-choosable Cartesian products of graphs. (Received February 06, 2017)