962-05-212 **Joshua E Greene*** (`jgreene@hmc.edu`), 7123 Smooth Path, Columbia, MD 21045. *Chromatic Capacities of Graphs and Hypergraphs.*

Given a hypergraph H, the *chromatic capacity* $\chi_{cap}(H)$ *of* H is the largest k for which there exists a k-coloring of the edges of H such that, for every coloring of the vertices of H with the edge colors, the exists an edge that has the same color as both of its endpoints. When H is an r-regular hypergraph, $r > 1$, with maximum degree Δ, we show that $\chi_{cap}(H) < (1 + o(1))\sqrt[r]{r\Delta}$, improving a result of Cochand and Károlyi (Discrete Math. 194 (1999) 249-252). This in turn yields an improved bound of $\hat{\chi}^{(k)}(\mathbb{R}) < (4 + o(1))k$, where $\hat{\chi}^{(k)}(\mathbb{R})$ denotes the kth upper chromatic number of the reals. We also answer a question of Archer (Discrete Math. 214 (2000) 65-75) by exhibiting a family of graphs for which $\chi_{cap}(G) = \chi(G) - 1$ for arbitrarily large $\chi(G)$, the ordinary chromatic number of the graph G. Lastly, we give a complete characterization of graphs G with $\chi_{cap}(G) = 1$. (Received August 28, 2000)