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J Larry Langley* (llangley@pacific.edu), Department of Mathematic, University of the Pacific, Stockton, CA 95211, and **K Sarah Merz**. *The Set Chromatic Number of a Directed Graph*. Preliminary report.

Chartrand, Okamoto, Rasmussen, and Zhang describe the set chromatic number as follows. Assign a color to each vertex. Adjacent vertices may have the same coloring. For the vertex v , consider the set of colors $NC(v)$ of the neighbors of v . A set coloring has $N(v) \neq N(u)$ for all pair of adjacent vertices u, v . The minimum number of such colors is the set chromatic number. We consider this definition generalized to directed graphs in two natural ways, by comparing outsets (equivalently insets) of adjacent vertices, and by comparing the outset of u to the inset of v when (u, v) is an arc in D . Unlike the usual definition of coloring, the set chromatic number may be different for directed graphs and their underlying graphs. (Received September 20, 2010)