1116-K6-2812 **Douglas Dunham*** (ddunham@d.umn.edu), Department of Computer Science, 320 HH, 1114 Kirby Drive, Duluth, MN 55812-3036, and **John Shier** (johnpf99@frontiernet.net), 6935 133rd Court, Apple Valley, MN 55124. *An Algorithm for Creating Wallpaper Patterns from Random Fractals.* Preliminary report.

We describe an algorithm that creates wallpaper patterns whose fundamental regions are filled with fractal patterns composed of progressively smaller copies of a motif. The motifs can be quite simple or very complicated. The local part of the algorithm starts by placing the largest copy of the motif at a random location in the fundamental region. After placing i motifs, the algorithm keeps trying random locations within that region at which to place the next motif until a location is found for which the new motif does not overlap any previously placed motif. Then i is incremented and this process is repeated. The sizes of the motifs obey an inverse power law which guarantees they will fill the fundamental region in the limit, though we stop after a finite number of successful placements. The global part of the algorithm copies the contents of the fundamental region to other copies of the fundamental region by using the transformations that generate the entire wallpaper pattern from the fundamental region. We have implemented this algorithm for the wallpaper groups $p1$, $p2mm$, $p4mm$, $p3m1$, and $p6mm$ ($= o, *2222, *442, *333$, and 632, respectively in orbifold notation). We have also made progress in extending the algorithm to other wallpaper groups. (Received September 22, 2015)