1077-B1-633   **Gwen Laura Fisher*** (gwen@beadinfinitum.com), CA , and **Blake Mellor** (bmellor@lmu.edu), CA. *Using tiling theory to generate weaving patterns with beads.*

Bead weavers create wearable fiber art by joining seed beads with needle and thread, including flat weaves that resemble woven fabric. Each bead in the weave is held in place by thread passing through its hole and the holes of neighboring beads. The resulting patches of fabric are commonly used to make jewelry, especially bracelets and necklaces. We show how tilings of the plane, especially periodic tilings, can be used as the basis for flat bead weaving patterns called angle weaves, including right angle weave, based upon the regular tiling by squares. We describe specific ways to create infinitely many intricate and beautiful beading patterns from periodic tilings, including edge-only angle weaves, edge-and-vertex angle weaves, vertex-only angle weaves, and across-edge angle weaves. We introduce the notion of star tilings and their associated weaves. We explain how some weaves can be generated in different ways. Lastly, we prove that there are infinitely many angle weaves, and we give necessary and sufficient conditions for when a particular tiling of the plane will induce an angle weave. (Received September 08, 2011)