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Building a better bracelet: wallpaper patterns in bead crochet

Susan Goldstine ✉ & Ellie Baker

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Abstract

A typical bead crochet bracelet consists of a narrow tube of seed beads sewn together to form an uninterrupted hollow band. Creating symmetric colour patterns on bead crochet bracelets is challenging because the beads form a continuous spiral along the length of the bracelet, making it difficult to align design motifs uniformly. We have devised a new technique for translating bracelet patterns into plane tilings and used this to create bracelets based on wallpaper group symmetries to stunning effect. We prove that every wallpaper group can be realised by a bead crochet bracelet. We also show that every planar bead tiling has a corresponding bracelet.

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