Journal of Mathematics and the Arts ›

Volume 6, 2012 - Issue 1

730 Views | 5 CrossRef citations to date | 3 Altmetric

Original Articles

Building a better bracelet: wallpaper patterns in bead crochet

Susan Goldstine & Ellie Baker

Pages 5-17 | Received 25 Aug 2011, Accepted 07 Dec 2011, Published online: 27 Mar 2012

Cite this article https://doi.org/10.1080/17513472.2012.654423

Sample our Mathematics & Statistics Journals

>> Sign in here to start your access to the latest two volumes for 14 days

Full Article | Figures & data | References | Citations | Metrics

Reprints & Permissions | Read this article | Share

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 exactly 13 of the 17 wallpaper groups can be represented by bead crochet bracelets, and we outline a general method for designing a bracelet whose planar bead tiling has a given wallpaper symmetry group.

Keywords:

wallpaper groups | plane tiling | torus | bead crochet | bracelet | jewellery design

AMS Subject Classifications:

20H15 52C20 00A66

Previous article View issue table of contents Next article

Acknowledgements

Sophie Sommer's investigation of wallpaper patterns in bead crochet as part of her science fair project ‘Mathematical Explorations in Bead Crochet’ was the initial inspiration for our work. She was also kind enough to allow us to interrupt her crocheting of the bracelet in Figure 1 to photograph the process for this article. Robert Fathauer's suggestions for how to construct a regular tiling on a vertical bead crochet chart got us past an early stumbling block. Kira Isaacs and Kate Magauran were patient and accurate bead-stringers extraordinaire. Judith Bertoglio-Giffin's pattern books provided a helpful spring board for thinking about bead crochet pattern design, and Amy Nastasi started everything by generously passing on her bead crochet craft expertise.

Related research

People also read | Recommended articles | Cited by 5

Creating symmetry: the artful mathematics of wallpaper patterns, by Frank A. Farris: Princeton, NJ, Princeton University Press, 2015, 284 pp., $35.00 (hardcover...

W. T. Ross
Journal of Mathematics and the Arts
Published online: 5 Dec 2017

Information for

- Authors
- R&D professionals
- Editors
- Librarians
- Societies

Open access

- Overview
- Open journals
- Open Select
- Dove Medical Press
- F1000Research

Opportunities

- Reprints and e-prints
- Advertising solutions
- Accelerated publication
- Corporate access solutions

Help and information

- Help and contact
- Newsroom
- All journals
- Books

Keep up to date

Register to receive personalised research and resources by email

Sign me up

Copyright © 2026 Informa UK Limited Privacy policy

Cookies Terms & conditions Accessibility

Registered in England & Wales No. 01072954
5 Howick Place | London | SW1P 1WG