Zeitschrift: L'Enseignement Mathématique
Herausgeber: Commission Internationale de l'Enseignement Mathématique
Band: 49 (2003)
Heft: 1-2: L'ENSEIGNEMENT MATHÉMATIQUE

Artikel: TILE HOMOTOPY GROUPS
Autor: Reid, Michael
Kurzfassung
DOI: https://doi.org/10.5169/seals-66684

Nutzungsbedingungen
Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. Mehr erfahren

Conditions d'utilisation
L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. En savoir plus

Terms of use
The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. Find out more

Download PDF: 15.11.2025

ETH-Bibliothek Zürich, E-Periodica, https://www.e-periodica.ch

L'Enseignement Mathématique, t. 49 (2003), p. 123–155

TILE HOMOTOPY GROUPS

by Michael REID

ABSTRACT. The technique of using checkerboard colorings to show the impossibility of some tiling problems is well-known. Conway and Lagarias have introduced a new technique using boundary words. They show that their method is at least as strong as any generalized coloring argument. They successfully apply their technique, which involves some understanding of specific finitely presented groups, to two tiling problems. Partly because of the difficulty in working with finitely presented groups, their technique has only been applied in a handful of cases.

We present a slightly different approach to the Conway-Lagarias technique, which we hope provides further insight. We also give a strategy for working with the finitely presented groups that arise, and we are able to apply it in a number of cases.

1. INTRODUCTION

A classical problem is the following (see [3, pp. 142, 394], [7]).

Remove two diagonally opposite corners from a checkerboard. Dominoes are placed on the board, each covering exactly two (vertically or horizontally) adjacent squares. Can all 62 *squares be covered by* 31 *dominoes ?*

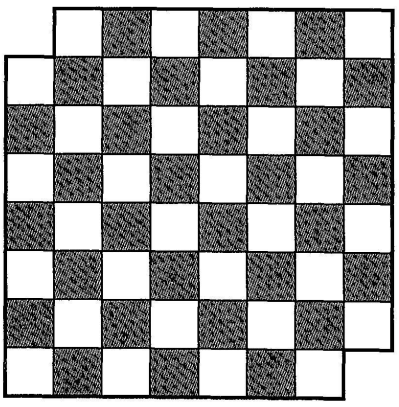

FIGURE 1.1
Mutilated checkerboard