

PRIMITIVE TILINGS AND COHERENT FRAMES

LUIS S. SILVESTRE, EDEN P. MIRO AND JOB A. NABLE

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Abstract. This paper characterizes primitive substitution tiling systems for Lie groups for which every element of the associated tiling space generates coherent frames for corresponding representation spaces.

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Contents

1	Introduction	47
2	Lie n-Groups and Coherent Frames	49
3	Primitive Lie n-Group Tilings	50
3.1	Primitive Substitution G -Tiling Systems	52
3.2	Primitive G -Tilings	55
4	Window Functions for Coherent Frames	57
5	Main Results	59
6	Summary and Conclusion	61
	References	62

1. Introduction

The highly ordered non-periodic Penrose tiling constructed in 1974 was recognized to model the ten-fold electron diffraction pattern of the aluminum-manganese alloy first observed in 1982 [5]. This discovery suggests a relation between primitive substitution tilings which the Penrose tiling is an example of [4, 14, 17], and quantum systems through the basic notion of coherent states [3].