

CPR ALGEBRAS

ARTHUR JAFFE AND BAS JANSSENS

ABSTRACT. We characterize reflection positivity in the context of parafermion algebras. In order to do this, we introduce the CPR (Canonical Parafermion Relations) C^* -algebras, which generalize the CCR/CAR algebras.

CONTENTS

I. CPR Algebras	1
I.1. Preliminaries	2
I.2. The C^* -Algebras	4
I.3. Canonical Parafermion Relations	5
I.4. Functorial Properties	6
I.5. Functoriality of Commutants	8
II. Gauge Transformations	9
III. Reflection	10
IV. The Normal Product	10
V. KMS Functionals	12
VI. Reflection Positivity	12
VI.1. Preliminaries	12
VI.2. Special Features in Case n is Odd	14
VI.3. The Main Theorem for n Odd	15
VII. Multiple Reflection Bounds	18
VIII. The Relation to Parafermion Algebras in Physics	18
VIII.1. The Parafermion Algebra for odd p	19
VIII.2. Reduced CPR algebras for p even	20
VIII.3. The Parafermion Algebra for p even	24

HARVARD UNIVERSITY, CAMBRIDGE, MA 02138
E-mail address: arthur_jaffe@harvard.edu

UTRECHT UNIVERSITY
E-mail address: mail@bjadres.nl