Tôhoku Math. Journ. 39**(**(1987), 465-504.

SECOND ORDER DIFFERENTIAL OPERATORS AND DIRICHLET INTEGRALS WITH SINGULAR COEFFICIENTS:

I. FUNCTIONAL CALCULUS OF ONE-DIMENSIONAL OPERATORS

BERNARD GAVEAU^(*), MASAMI OKADA^(**) AND TATSUYA OKADA^(***)

(Received January 29, 1986)

Contents

Introduction	3
Chapter I. Definition of operators with singular coefficients and their	c
1 Mativations coming from mathematical physics problems	7
1. Motivations coming from mathematical physics problems40,	ן ר
2. Relation with the general theory of Different integrals $\dots \dots \dots$	1
3. Definition of the operator L	1 7
4. The one dimensional case, method of solution	1 5
I Hunsthesig and general formulas for the transfer matrix	2 0
1. Hypothesis and general formulas for the transfer matrix	2 0
2. The sen -adjoint case	2
5. The non-sent-aujoint case $M=2$ on 2, solid adjoint case $M=1$	ן ב
4. The particular cases $N-2$ or 5: self-adjoint cases	9 2
5. The particular cases $N-2$ of 5. Non sent-adjoint cases	э ∩
Chapter III. The operator with general frequar coemclents	, ,
1. Computing a linite product of transfer matrices	ש פ
2. The heat kernel for a general limit one of continuous coefficients (9)	⊃ ∡
3. Going to the continuum limit: case of continuous coefficients484	÷
4. The continuum limit: case of discontinuous coefficients	3
5. Comments about the form of the Green functions	L
Chapter IV. An example of singular perturbation: limit of operators	^
with irregular coefficients	z
1. An example of a sequence of operators and their neat kernels492	2
2. The case: μ tends to 1	3
3. The case: μ tends to μ_0 , $-1 < \mu_0 < +1$	4
4. The case: μ tends to -1	5
5. Conclusion 493	b
Chapter V. Diffusion operators with spherical symmetry in κ	b
1. Transfer matrix for a self-adjoint operator with piecewise constant	~
coefficients	6
2. Spectral resolution for a self-adjoint operator with piecewise	_
constant coefficients	U
3. Spectral resolution for a general self-adjoint operator (continuous	
coefficients)	1
Keferences	4