## LEC.4: GREEN'S FINCTIONS

TODAY: COMPLETENESS OF EIGENF.

BIG PICTURE OF (P/d) DE'S.

GREEN'S PUNC IN PLNITE DIM -> SUPER PSS.

BREEN'S PUNC IN DE.

EXAMPLES

REFS: Stone i Goldbart: 4.3, 5.4
Calvill: P. 124, 284
Goettel on-12
Boaz 15.8

BUICK NOTE:

completeness of elecupulations

(= (e; lej ) = Jodx w(x) e; (x) = Sij

MRO TRUE: (x) = 8(x-8)

= ? Idy wly) e; (y) e; (x) fly)

WHICH IS PRODUSERY THE MEANING OF S

	eg. Fourier series: Lei>= 12 SIN (OTTX)
	= [ [ SN(UAX) SN(UAB) = 8(x-4)
	Els sin sin  Eliz sin sin
	Remarks: thus relation is not formally a convergent) not surprising, and formally a function.
	PAR OF TONIKS  OK. PERMEMBER THIS RESULT.  OF SEPRON VARS
	BIG PICTURES > MULTOMOGENESUS
DNE DNDG VAC.	DDE UNEAR - MUTOMOGENEOUS  FUNK
ng (10)=	PDE NONUNTAL MARE SPASU'C; BAG OF TRICKS
Megrani	ey, perturbations
	-> Feguman hograms.
	L~4324+M24 (x43)

## CREEN'S PUNCTIONS!

FIN. DIM. MALOGY: A 17 = 19>

PHIRAMICS STATE SOURCE

PHIRAMICS STATE

EFFECT

EFFECT

CAUSE

T

we know what the effect is from physics; a least infinitesimally

Assume invertible...  $1+>=A^{-1}19>$ 

SUPERPOSITION: If 19>= 19,7+192>

1P> = A-1 | g) + A-1 | g2> -> = A-1 c; lei>

ALL YOU NOTED TO KNOW IS EXPECT OF AT ON PRASTS PRIMED STORES WHEN BULLD UP SOLUTION BY PUTUNG THEM TOGETHER.

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	UN OP. CGREEN'S TS BUT. IN N-DIMENSIONS PREVIOUSELLA
	C3 CD"=" 0" SCN CD)
	MORE MEUSELY:
	$O_{x'} G(x,x') = S^{(n)}(x-x')$
	ars point. Bouring

HOW IT WARKS 
$$= eg \left(\frac{1}{4x}\right)^2 + M^2$$

SUPPOSE  $= f(x) = g(x)$ 
 $= g(x) = g(x)$ 
 $= g(x$ 

6.42, p. 234

G(x) = 1 eik. x G(K) d3K
8(3)(x) = 1 43K Gik.x < Ax+0 desper wt.
$C = \sqrt{2\pi}$
then: - A G(G) = - A Je'E' G(E) 23K
= 1 K/2 G(F) 93F
as where is Reg. (b)
- G(F) = 1/K/2
= G(X) = Jeik-x K= 49K = 49K
- Harry Range
thom contain integral.
(next time)

,

apple 9.88

## FLOENFUNCTION EXPANSION

eigent wi eignal 2;

-17=11 WI ENDIGHT X) WI Y=102 For Q - (4x)2

WE SHIVED EARLIER THAT (etes) = 8(y-y)

GRETEN'S PUNCTIONS SARVISFY

ANMOG OF DIABONAL MATPOX:

$$\begin{pmatrix} x_1 & x_2 \\ x_1 & x_2 \end{pmatrix} \Rightarrow \begin{pmatrix} f_1 \\ \vdots \\ g_2/x_2 \\ \vdots \\ g_3/x_1 \end{pmatrix}$$

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	INDIMENTS.

850766 812.3  $\Theta = -(\frac{1}{2} | d_{x})^{2} + 1$ 

on space x e (-00, +00) + BC + (±00)=0

G(x,y) = 0-1 100 eik(x-y) 1/K

8 (x-y)

= 1 eik(x-y) dk

<u>C.</u>...

from FOURIER ON UHS

MODIFIEDS: (4/9x) 5 + 1

1901 12 (4/9x) 5 + 1

1901 12 (4/9x) 5 + 1

1801 12 (4/9x) 5 + 1

AS l > 0: G(x,y) -> B(x-y)
MANCES SENSE, O-> 1. 1º OG - 8

CLAIM (WE'LL PROVE LATER):

FIMS DIM.

G(x,y) = = = = [x-y]

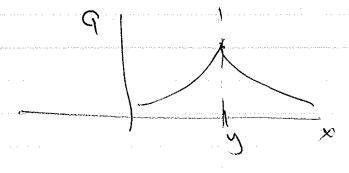
OG = 8

Q: WHERE DOES ( Go?

21 e-(x-y)/p

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A THE REAL PROPERTY AND A PROPERTY OF THE PARTY OF THE PA	SAMORG: SOLUTION FROM PATCHTUG.
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**************************************	(-exaly) 8(x-y) + exbly) 8(x-y)
and the second	
	met vanish!
	STUDENISE DE DG
	contains $C - 1 \pm 8(x-y)$
	WHICH IS INCOMPATURE IN OG = 8.

OBSIDENTE: FOR CHOO DE,



MW P.657	A SETTER EXPLANATION OF ELGENUTE EXP.
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