Introduction to Rankin-Selberg Method strengment An	
· History · Basic example (holomorphic modular forms for SL(2,12)) · Basic example (holomorphic modular forms for SL(2,12)) · Amore general case: Glanx Gla · Application · Reference	
Rankin - Serberg Mernod Rankin - Serberg Mernod Robert Alexander Rankin Are serberg Robert Alexander Rankin Are serberg Robert Alexander Rankin Are serberg Robert Alexander Rankin In 1939 by Rankin, 1990 by Serberg Is introduced independently in 1939 by Rankin, 1990 by Serberg Is introduced independently in 1939 by Rankin, 1990 by Serberg L. Functions. In the serberg of automatic analytically constructing and analytically continuing serberg important examples of automatic function on GLn (Godernant Jacquet) Standard L. Function on GLn (Godernant Jacquet) Standard L. Function on GLn X GLm. (Jacquet PS JSh. Texterior Product L. Function on GLn X GLm. (Jacquet By M. Completed by M.	orphic alike oegli

Enter the street of the street

Let f. g be two holomorphic cusp forms on the upper not plane of 3 L(2, 2) setting) - Basic Rankin-Selberg cusp form: a modular form which vanishes at the cusps. rodular form a modular form with (10)=0. (C(0) 15 the value of f at of worght &: Duopounday Cinth upper noit plant of weight & for 51(2,4), with Fourier expansion M= SIMIEDO in -> cusp 2) f(a7+b) = fizi= Z an ezninz gizi= Z by ezninz 102+d) x +(2) 10 b) est(2,12) Write C= SLIZIZ), the modular group Let P= {(**)E[] 3 upper triangular group Then we can define Eisenstein series Es as ES(Z)= IM(YZ)S Here I acks on $\frac{7}{2}$ by $\binom{a}{c}$ $\binom{a}{c$ - One can venify: Es converges absolutely for Re(2)>1 · Es 15 SL(2, 2) - invariant . Is has an analytic continuation to SEC These are our fours on 10+ 3(5)= T- 12 [1(=) 5(5) ZOTA func: 5(5)= 12 hs · Es has a functional equation: analytic properties wi gamma factor TI - St [1/2) of C-Func tool 3(25) Es = 3(2-25) Ers. Functional equation Petersson inner product for weight & modular forms: LEGY F(3) GIELYK dydy
wint My SL(2)R)-INV. MENSWE 6-invariant

b dydd	
5 dyey	
Rankin-Selberg integral 2 F. Es, 97 = 5 f(2) 9(2) E(2, 5) yk dray 2 F. Es, 97 = 5 f(2) 9(2) E(2, 5) yk dray	
LF. ES J. T. T. W. S.	Color Color
of the forms is auspidal)	
converges for all SEG CIF one of the forms is cuspidal)	
converges a liquation	
econverges for all SEC CITY. oundinties antinuation (sterl) Γ	
Thm: <f. (3125)="" (3125)<="" (4ti)="" (5th-1)="" -="" 17="" 65,="" 97="" td=""><td>1000</td></f.>	1000
Thm: \$\frac{3}{3}(25) \ \xeta \in \frac{3}{5}(25) \ \xeta \x	Action and
has an analytic continuation to be how have an identity	المنجم
The state of the s	şelədi
Pt. For ive	201945
Similar to Fulan 's thm: dxdy = () (9177) 47	parasis (
Pf: For integral? Similar to Fulani's thm: [Haav integral?] P18 P18 P18	
The second secon	2000
4 4 (13) - 45. f(3) 9(2) 4 k	Salari
$\int y^s f(z)g(z)y^k dxdy = \chi f(-Es), 9>.$	290341
ys f(2) g(2) y y y	age to the second
	su contra
For furdamental domain for P16, take	
For fundamental domain.	25000
For fundamental conv = 53=x+iy=h: 0< x<19 stb-1, 1 = x = im n)x dx)) (
am vn) g () c	Sorbie*
$ \frac{1}{4} = 53 = x + iy + 6h = 0 = x + iy + 6h = $	احتيون
For fundamental actives, $\Phi = \int \mathbb{R} = x + i y \in \mathbb{N}$: $0 \le x \le i y$ $\Phi = \int \mathbb{R} = x + i y \in \mathbb{N}$: $0 \le x \le i y$ $\int y^{5} f(x) g(x) y^{6} dy dy$ $\int y^{5} f(x) g(x) y^{6} dy dy$ $= \lim_{n \ge 1} anbn \int y^{5} dx dy$	ppicatori
n>1 450 -1-(S+QK+) ("45+R+)	6
$ny \rightarrow y = (4\pi)^{-6+R-1} \geq anbn N \qquad y > 0$	
(ATI) -(S+R-1) T (S+2R-1) Z ONON	المتستير
	Marie
This is true for Recs) >1 And by the identity principle of Eisenstein series canalytically And by the identity principle of Eisenstein series canalytically And by the identity principle of Eisenstein series canalytically	الأوليان
And by the identity principle of Eisenstein Series, away from continuous), it is absolutely convergent for sec, away from continuous), it is absolutely convergent for	Y
and by the absolutely convergent to	
continuous), it is absolutely converge.	

THE THE PROPERTY OF THE PROPER	
Rankin's ordginal	the poles of the Eisenstein series (b)c the Eisenstein series is of
Purpose in consideral	hat a will and the clust form are at laplan acid
the tensor product	noderate growth
approach Pamanujan	e Functional Equative
conjecture on the	(1) Shalika)
size of Hecke eigenvalus.	(Cogdell's paper) (Jacquet, Ps, Shalika)
	GLNX GLM convolution
and the second s	different between n=m and n+m
Company Compan	involve with Fisenstein series.
- make and a formal displaced assessment and an other proportion and an other property and the second and an other property and the second and an other property and an other pr	N=M
- ay yann ami'nan fi 1900 da da gana da ami'n da ta'u da da ay ay ay an	Figlobal field. A: adele ring.
vacquarenthemme a sind oppharmach de servicia depres person de sti selection oppharmach a servicing compility in les est	P: standard maximal parabolic subgroup of GLn with levi factors
	GLn-1x GL1 (Glm 7)
	S: PC/A) -> C* modular quasi-character
- MACES AMERICAN CONTROL OF A PROPERTY OF A STOCK AND	
$Add \ge -4 \cos \alpha C d^2 d Add \ge \cos \alpha d C d^2 \cos \alpha d \cos \alpha d C d^2 \cos \alpha d \cos$	S(h *) = Idethia, ne alm, (A), act.
	For SEC, let fs & Ind P(A) (8p3)
.	
and and the property of the state of the sta	of smooth func.
Provide and other decommendation of the confidence of the confiden	efs smooth func. - fcpg = Spcp) s fs(g) also assume as standard max'l compact subgroup of
The second of th	73 16511111111111111111111111111111111111
	GLIN, A) is independent of s.
	WLDG, we can write
- Noncongregation of the Control of	IndPIA) (Sp) = (Sp) Indp, (Sp),
restward	PLA) CIP CONTROL GLANTEN
Product	=> fs(a) = TT'fs,v(gv), where fs,v & Indp. (Sps).
Soliton and Soliton from Para Association for the Control of the C	
produce the first development of figure the production and the first specific to the fir	We have an Eisenstein sevies
$p(A(x)) \leq C^{\infty} + p(A(x)) + \frac{1}{2} \left(1$	

| -

u Assonie in Andrea (Andrea (A	
	E(g,s)= s(n,s), \(\sum_{\text{F}} \) \(\text{Sp(rg)}^{\text{S}} \) \(\text{PFIGIUN,FS} \)
	 It is convergent for Recs) suff. large It has meromorphic continuation to all s.
	it d. Az be alin) cusp forms in automorphic vern te, Tz.
	Consider \$\frac{\psi_{1(0)} \phi_{2(0)} \E19,5\d9}{\psi_{1(0)} \phi_{2(0)} \E19,5\d9}. Grantszagennia)
	Her "unfolding".
	5(ns) f W1(9) W2(9) fs(9) d9 @
	where W. Wz are whittaker functions defined as y: A/F > © nontrivial additive character N: algebraic subgrown of upper triangular unipotent matrices
	allting a character 4N: NA > E as
Milaker woods	Then $W(g) = 1$ openg $\psi(n)$ on $EW(\pi_1, \psi)$
	Wrig)= I dring vin dn & Witz, 4).
	Because of the uniqueness of unitaker model (dim W = 1) these functions are Euler products, it if we assume whole
	di= Q di, d= Q de, in Ti= Q Tiv

	140i(0) = T(141 - 101)
	Wi(g)= IT Wi, v LQv) numtraker function on GL(n, Fv).
g given yan makan karangaran yi Sila ata 1820 di 200 di 200 di 400 di 200 di 400 di 200 di 200 di 200 di 200 d	> = TT Suchs) J Will (gr) Wz, v (gr) fs, v (gr) dqu
	NvZv/GLCn,Fv)
	10cal Bedekind Zeta-func.
Jus. WW.	NZIGUM, FU) NZIGUM, FU) NZIGUM, FU)
agilia de el esta en como como de el de al 1888 de 1888 de el 1880 de de de 1880 de el esta el 1880 de el 1880 El esta el esta en como como como de el de al 1880 de 1880 de el 1	
alliperaturus paramenen mendelah di Eliza di Salaha salah Eliza di Salaha da Salaha salah Eliza da Salaha da S	IFMIN.
	m=n=1: global integral is "of tecke type".
e of the contract of the contr	It books like
goggafalluraring ang and amous some Elich giften de Caregonoperated Balanchipethildellis (1905), beautiful and the caregonomy of the Careg	9.(3,) P219) tdet 315-1/2 (19)
g y de facilità (d.), è per , menumenta a sur di un l'enché di sul l'épide qui ai quant quant millement a sul sinci per per	Glim, FlGlim, A)
add of the first own and a second and analysis of the first own place in the first own place of the first own and the fi	(WTO Eisenstein series)
$w_{ij}(t,t) \in \{0,0\} \text{ for all } t \in \{0,0\} $	Since the Rankin-selberg integrals of Hecke type are fairly rare,
a to the second	many authors do not use the term Rankin-serberg unless
$s_{C((0,1),q(1),1,q(1),1,q(1),q(1),q(1),q(1),q($	there is an Eisenstein senies.
his of the fig. 1000 and many organization and an electrical field of the description of the control of the con	m < n - 1, eg $m = n - 2$.
radi neudi 1931 kwa mira wa 12 mai 19 km	H works wike (\$\frac{1}{4}\left(\frac{3}{4}\right) \q
n. Likego digi kerganun dermen den grupy dan melai Sanit Esti Salatan (C.) angan nyapur di hara samahidik	GLINZIFI (GLINZIA) (AIF) N-1 A/F
agonagon for his la sistem si Communication de comma di 2000 di Colon di State (State (State (State (State (St	4(x) dx d3 d9.
tide elle medicione despet me giommente me distriction de des metropolitism en distriction de despetation de d	
aboutet ta tilla i set til stort for en	loral integrals:
enerwalnich de 100 vor ein euromanismisch zu werden ein der das die stelle der der der der der der der der der	(S, W, Wz) = (W(91) W2(9) det g 5-1/2 dg.
d Stagen van de gewann de deur verken de verken van de de verken de	NZIAM
	M <n-1 (sm="" 1;="" 1x+1)="" dxd9="" dxd9<="" idetgl="" m(jxm,f)="" nz="" s="" th="" w(="" w(s,w1,wz;)="S" w219)="" x=""></n-1>

eg es a comitión establec es anologo es a comitión es anologo es acomition en acomitica en acomi		
	Main Results	
	Thm: The Tepn of Gln, Glm of Whittaker type,	がある
	Let WETULTI, WZ & WLTIZ, 4), then:	
	1) Fach of the integrals 4115,W1,W2, fs) (n=m)	
	& Jus, Wi, Wz, J) is absolutely usnvergent	
	for Recs large:	
	(ii) They are rational functions of 95.	
	More precisely, n=m, Jus, W, Wz, fs) spans a fractional	N. Contraction
	Ideal CE9-3, 957 LCS, TIXTID) of the ring CE95, 9-57.	1000
	The factor Lisiting has the form pig-sit, where PECES,	
	MA PCO	
	(Similar result for n=m)	
	(iii) Functional equation n=m.	
	7 Pactor Ecs, TIXTIZ, 4) of the form (q-hs s.t.	400
	TH (1-5, WI, WZ, +3) / L (1-5, TT × T12)	
	= WT2 (-1) PT & (S, TIXTIZ, FS) (S, WI, Wz, FS) / L(S, TEIXTIX)	Marca
	(Similar result for n+m).	
		- Store
	APPLICATION!	NAME OF TAXABLE PARTY.
mme karina la hanning menga-pang-pang-pang-pang-pang-pang-pang-p	«Fisenstein sevies theory	0440
	> the analytic properties of the constant term of the Disenstein	240004
	gents can be derived from our theory.	mirati
	· Enaracterization of automorphic repns.	مسور
	TO THE MEDIN OF GREEKS with some auxillary conditions,	skom
	It is cuspidal & automorphic iff & automorphic vern of of	Antibelf
HSVÁ	GLF2(FA), the corresponding t-fun has the appropriate	No.