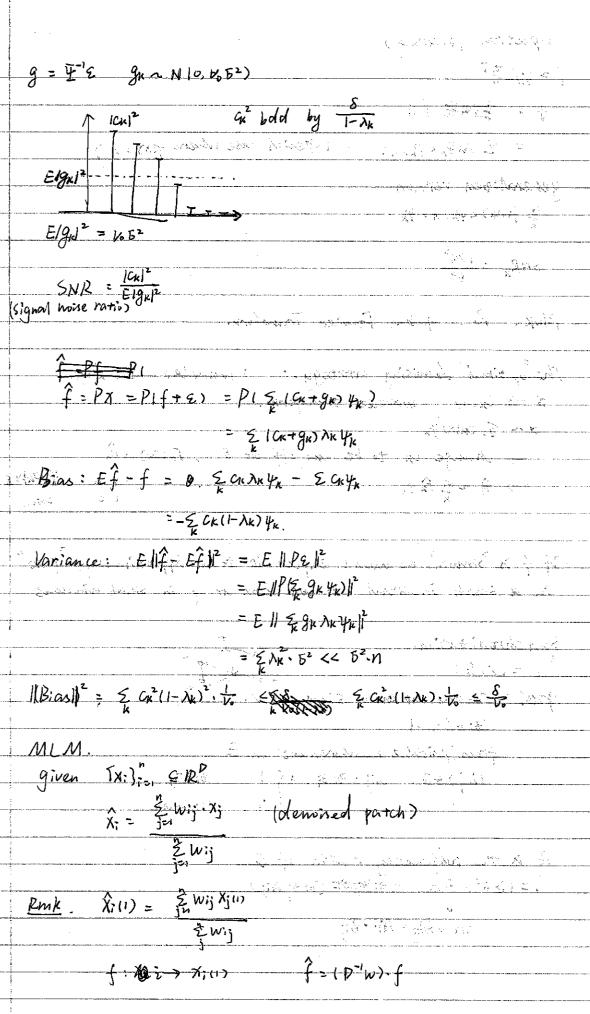
and definition of the state of	Topic 4 Graph Denvising
•	Set $W_{E}: G = (V, E)$
	Set $up : G = (V, E)$ Wij han, positive symmetric (e.g. $w_{ij} = e^{-\frac{  x_i - x_j  ^2}{2}}$
And the second s	$P = P^{\prime} U$
	$P = \overline{P} \wedge \overline{\Psi}^{T} \qquad \underline{V}^{T} D \overline{Y} = 1 \qquad \overline{Y} = [Y_{1}, \dots, Y_{n}]$
والمنافقة والمنافقة المنافقة ا	$\overline{\Phi} = D\overline{\Psi}$
neer, projection — at the second of the seco	$+\mu D^{h}$ $f \cdot V \rightarrow R$
er Statistick of the agent in the State and agent is the second of the control of the control of the second of	$f \in \mathbb{R}^n  f \in V \to \mathbb{R}$ $\dot{i} \to f_i$
erent for ståle en skale fatte år kalendere sjärlige fillet och	assumption: fis smooth" with graph
	-Generalized Fourier coefficient f = 5 ck 4k
	Cx: generalized Fourier coef.
* F 207Ammetrickensen in tekken Tallen i skiller unt der medet die determinis	Cx: generalized Fourier coef.
	4. generalized Fourier basis
	Rink the are the eigenfunctions of graph Laplacian
	(e'h") sinka and coska are eigenfunctions of the Laplacian operator s.
ordina de la casa de l	Henre this are called Fourier basis.
	100 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m 2 m
mailman in Marada Bordiffe manishik an i Borard 140 s apratupate i Bandandellikade i Danada s'i	Prop. H f(x) 6 C'(0,21) then (1f(x))2dx € C.
	then & Sikck. eikn 2 da
	E E . vr. 1ck 2-k2 des meaning  ck  decays faster
	though to
* Almanda (Malayan) ka Amalakana ana ana kahalakana anaka ka ka ka ka ka ka ana ana an	thran to
ere de casa de companse de la casa estada de casa estado en casa estado en casa estado en casa estado en casa e	Pomple The Smoothness" (i.e of is not differentiable how large the derivatives,
	of f implies the decay's property of (CK)
ب معاون شند داد توان که منتوع در در ساخت شده در در استان در	$74 f^{(m)}(x) exists and  f^{(m)}(x)  \leq C$
	then Cu decays faster than 1/km.
vanasas <u>maasinas viituvii taista vanasas s</u> avas saasas saasas vastas vastas vastas vastas vastas vastas vastas v	To ATT I SHOW TO THE T
Andrew Market V. C. Andrew Market Market States of State	In graph-Laplacian case Similar result holds
a and Object the designation of the State of	Prop. Suppose $f = \sum_{k} c_k \gamma_k$ and $f' L f < \delta$ , then $c_k < \frac{\delta}{1 - \lambda_k}$ for $k > 1$
Field v. Bir. Stylleriya variatiriya va salabili salabilika	1= 1,712 71 70. are eigralues of P=D'w. (L=D-w)
namel i geten (1,5), ang guyang at sa (1,5), and et e e e e e e e e e e e e e e e e e e	Rmk. f Lf = \( \frac{1}{2} \)

eg. graph 1-D grid --- $f'^2 f \approx -\int_0^1 f(\omega f) dx = \int |\nabla f|^2 dx$ (Consistency) Pf: L=D-W=D(1-P) = P4 = AK4. Then  $f^T L f = f^T D(1-P) f$ (1-P)f > & CK 17-P)fx = & CK (1-1x) fx f'Lf = 15 CK 4x) D(5 CK(1-NK)4x) = E CKCL (1- NL) PKD 42 = 5 CKa (1-21) Ski => CR (1-NK) decays faster man 1-NK Phyk. Suppose Nx 10 fast, and 5 small then ch has a good bound and decays to o fast. Recall given  $\pi = f + e^{-\frac{\pi}{2}}$ f in the unknown true signal.

E~N(0, B27) E: 20 N(0, B3 Proposal. f=Px E= Egry 1gx1 does not decay = Eg for go R 4 F is limitary. Then g~ N(0, 621) 70 simplify analysis, as \$704 = 1 we assume D=167 da regular graph) and then I: 10 47 E i.e. The F is unitary

to the second to the second second



spect	from filtering)
三里八	T. Company of the second secon
Ĵ =	FINE PA
	22 Y 2 Y 2 Y 2 Y 2 Y 2 Y 2 Y 2 Y 2 Y 2
	Mited version.
Zf	(Nx) ~ qx, x> Yx
and a commence of the first	
SNR	$\frac{1  C_K ^2}{ C_K ^2}$
	Pr. global Formier Transform
ZWK.	Pr. global Formier Transform
-/ =	1" Love to the second of the s
ne op	timal" demising strategy: havelet shrinkage Chix) wavelet transform
7.2	$\leq$ change on to be out off at $\delta$ , $T_{S}(CK) : \hat{G}_{K}$
	number of to be out off as o 18 lok) = ck if Icules
	7 2 Entr
to an indicator assumes.	
A 4	is "smooth", we would expect it to be approximately "flat"
	small interval = we look at f in Small windows
un d	hmonization.
U	(V,E)
	: recover unknown signs on V.
	3; 61-11
	from pairwise measurement on E
·	(i, j) 6 E. Gij = 3; 8j = 5 1 3i = 3j
.,,	-1 Otherwise
on forman miles of severe at	
Αà	the adjacency matrix of G.
	12-77\ \(\text{A}\) = \(\frac{3}{2}\) \(\frac{10}{12}\) (2.5. \(\lambda\).
المعامد السامد مسمد	
	(A & B); = A: ; - B;

------

	· We can recover the unknown signs by simply exploring the graph
	(when the graph is connected t there exists true signs (without conflut)
	: can recover up to flipping all signs in a connected component
· · · · · · · · · · · · · · · · · · ·	
	Next we corrupt some of the observations. > which may result in contraction
	Gij = $\begin{cases} 3i3j & (i,j) \in E \\ (Aij=1) \end{cases}$ Bernoulli $(\frac{1}{2})$ $(Aij=0)$ $wij = \begin{cases} 1 & \text{with prob} \stackrel{1}{=} \\ 0 = 3370 A + wo = (1.77 - A) \end{cases}$
•	Bernoulli (2) (Aij =0) Wij = 51 With Prob =
	G = 33 OA + WOA (1.1 - A)
	Task: given a need to recover &
	Method: take the first eigenvector of G. P.
	$\hat{z}_i = sqn(v_i)$
	rmk. SDP relaxation of the problem:
	nox <6. X>
	6a. X ≥0 . Xi; ÷1.
	(G.X) = Tr(GX)
-	X* = 3-3 <sup>T</sup>
	$Tn(GX^*) = Tn(G \cdot \overline{z} \cdot \overline{z}^T) = \overline{z}^T G \overline{z}$
	$X_{i,j}^{\dagger} = \overline{\mathcal{F}}_{i,j}^{2} = 1.$
na remi ari. Khamar I mazanir I k	Yelax the rank constrain rank(x)=1.
,	TOTAL
Sm	prose A is a random graph is jid. (independent of z ad w)
I	
	Aij - {   With Philo p with philo 1-p
	EAG = (337)OEA + WOF(1-]T-NA)
	$= p \cdot 33^{7} + (1-p)W$ $=   (1-p)W   \leq CJh$ $C = (1-p)   Voorbula  _{2}$
	rank 1 matrix. with 1 = pn.
	when pn x large Ruough, (pn > ĈJh)
	the correlation between the eigenvector of the
	large eigenvalue (~pn) and the vector of A -oth o city
	approaches !

No-come !

	Weterministic Aigzi
. 116	# Ignod edge (inj)}
	object to the second of the se
•	
	eg 1 Zz signs
A Broken Co	English was set by the first there is not the water than the was a said
	egr. S. signs 06[027]
**************************************	egr. S. signs $06 [0.2\pi]$ $0:j = \langle t:-t; k p p p \rangle$
	Milens) mp. 1-p. 1-p. 1-p. 1-p. 1-p. 1-p. 1-p. 1-
J	•
, que en la grante de la compansión de l	7; 2 e iti
	$e^{7(t-t_1)}=\overline{t_1}\cdot\overline{t_2}$
	Sim of F
and the second and an experience of the second and the contract of the second and	The state of the s
and Annual Annua	NEW MARCH STATE OF THE STATE OF
dia mandriale designation and the second proof the effect of the effect of the second designation of the second of	5 1 1 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
	The second of th
	TOTAL STATE OF THE
	The state of the s
alescents described and the second se	
The second secon	
is a standard distribution of the state of	Control of the Contro
order of 1830% Commissions at an 1 mass at the 1 miles at an in-	The state of the s
ar manadamatahan di gerjammipa pangangan an anadalah bang	
And the second reference and the second seco	
orani da da manda manda da manda da manda da manda da manda da d	
mini de la mini de la registra de la compania del compania de la compania de la compania del compania de la compania del la compania de la compania del	