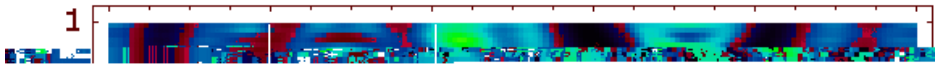


FT ŸS matrix

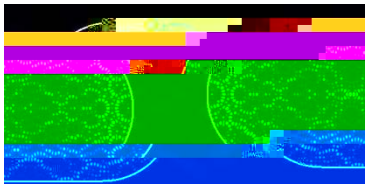
$$S(\ )H\ P^{T}\ e^{\ i\ H}\ FQ\ ^{1}FP$$

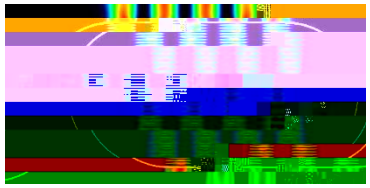
$$QFQ\ \ |\ \ e^{\ i\ H}\ ;\ \ e^{\ i\ H}\ \{\ ;O\ \ HE\ \ i\ \ /*2$$

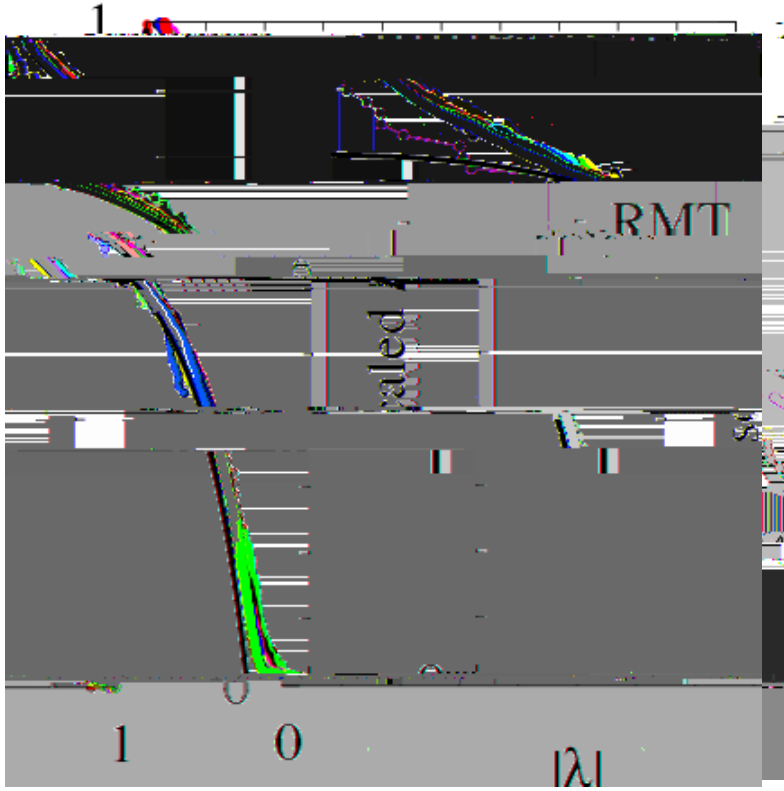
$$x_{n+1} = x_n + p_n \pmod 1$$

$$p_{n+1} = p_n + \frac{K}{2\pi}\sin(2\pi x_{n+1}) \pmod 1$$

$$F_{nm} = \frac{1}{\sqrt{iM}}\exp\left[\frac{i\pi}{M}(m-n)^2 - \frac{iMK}{2\pi}\left(\cos\frac{2\pi n}{M}\right)\right]$$





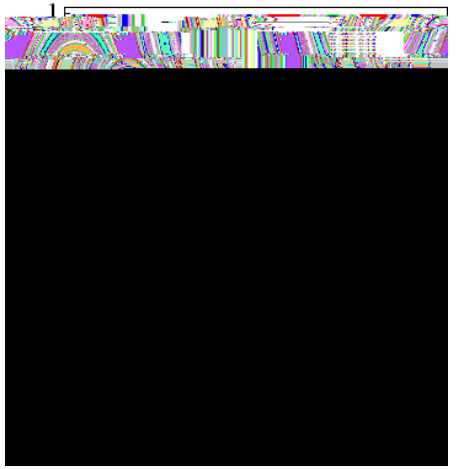

1
RMT
aled
1
0
|λ|

$QFQ \quad {}^{(1)}_{n} \quad 0 \quad (\quad {}_{n}O \quad 0)$ $QFQ \quad {}^{(t \quad 1)}_{n} \quad {}_{n}O^{(t \quad 1)}_{n} \quad {}^{(t)}_{n} \quad {}^{(t)}_{n}$

f $\mathrm{P} = P_2 P_2^{\mathrm{T}}$

f $\mathrm{P} = P_3 P_3^{\mathrm{T}}$

f $\mathrm{P} = P_t P_t^{\mathrm{T}}$



$(QFQ)^t \mathrm{P}_t \quad 0, \quad \mathrm{P}_t \mathrm{P}_s \quad 0 \quad (t \quad s)$

$A \quad \exp(\quad t) \quad 1/M \quad \ddot{Y}t \quad \frac{1}{/} \ln(M) \quad t_{Ehr}$

$\mathrm{rank}\,\mathrm{P}_t \quad M(1 \quad e^{\,t_{Ehr}/t_{dwell}})$

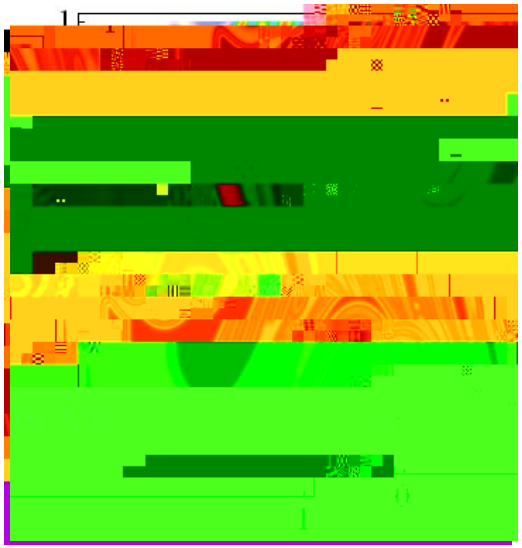
$t \quad t_{Ehr}$

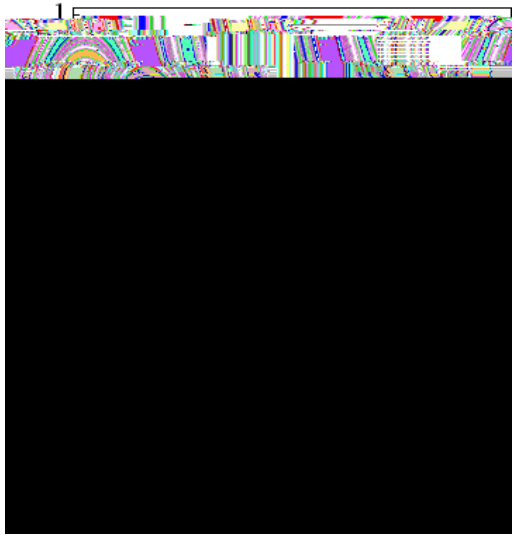
$Me^{\,t_{Ehr}/t_{dwell}} \quad \sqrt{M}^{\,1 \;\; 1/ \;\; t_{dwell}}$

P

U $QFQ=UTU^{+}$

T

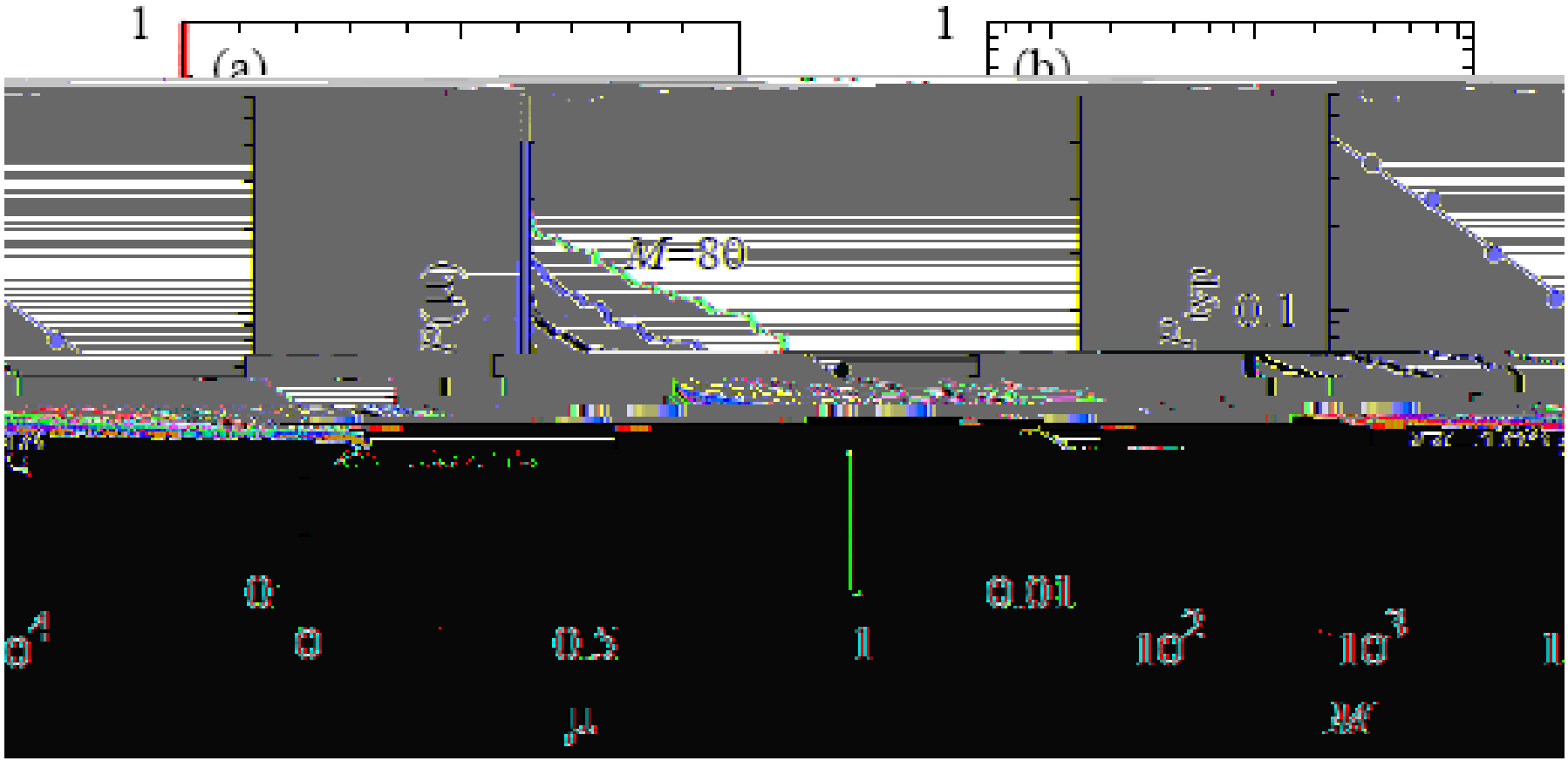


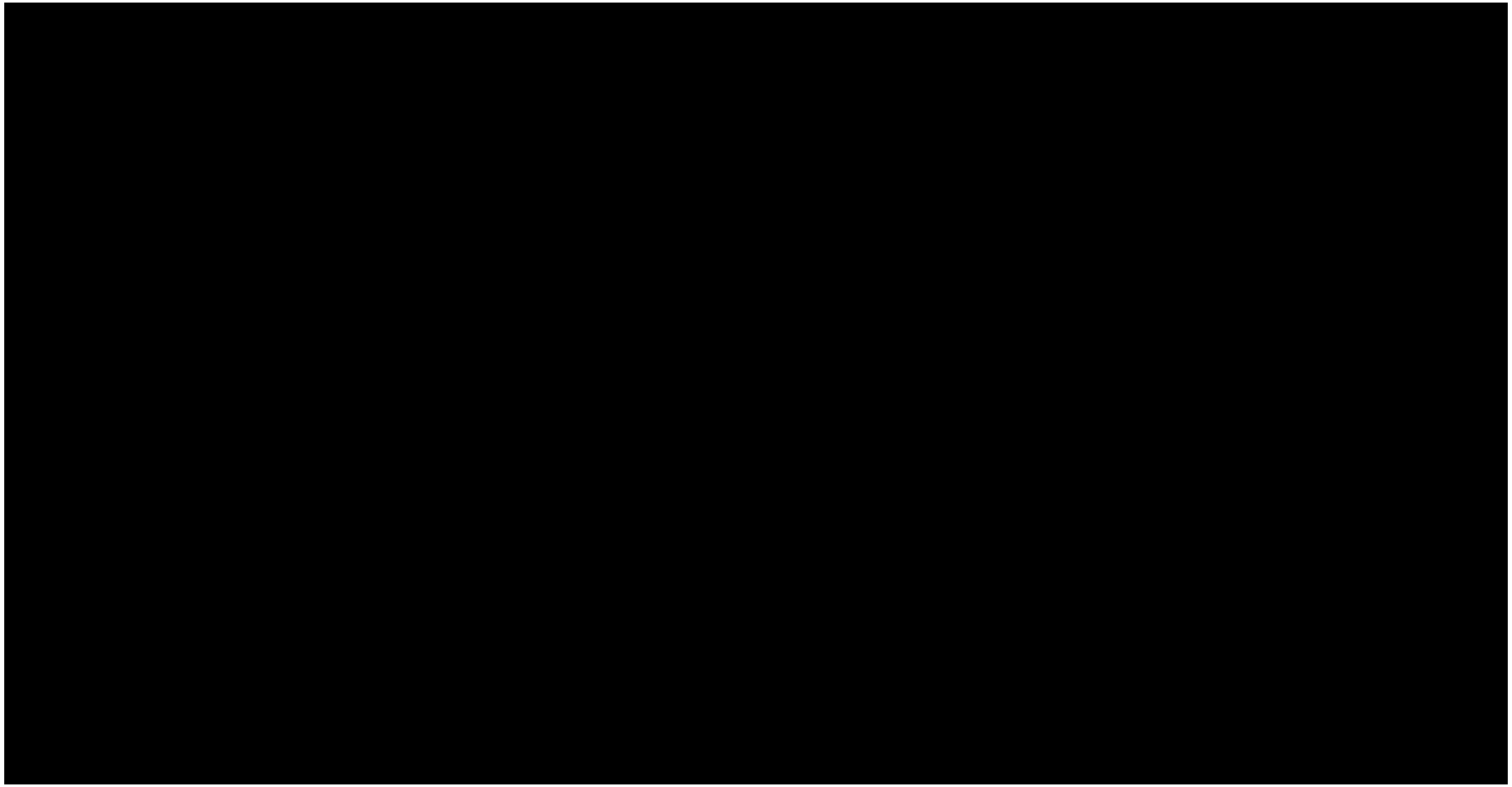


$\rho \in [0,1]$

-

-


1
(a)
1
(b)
M=80
0.1
0.01
0.3
1

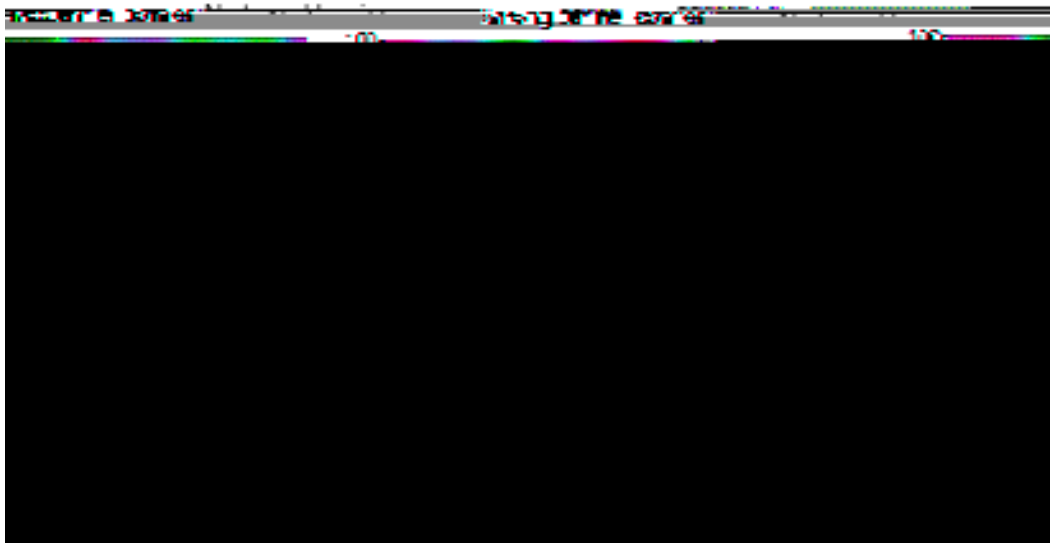


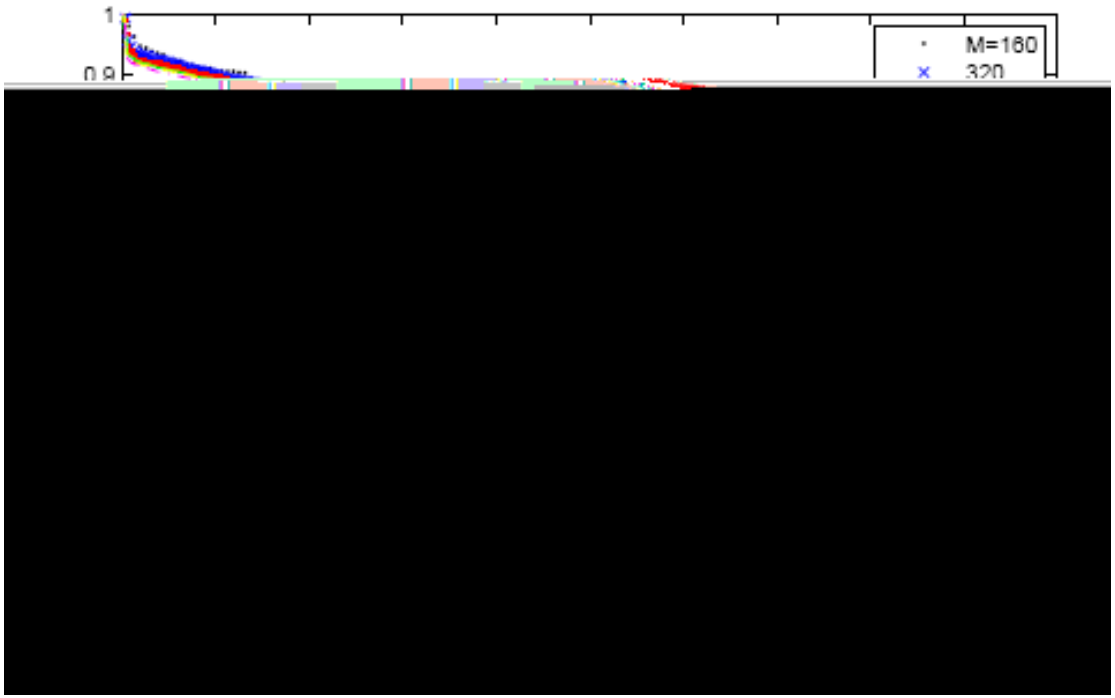
Areas also shrink algebraically:

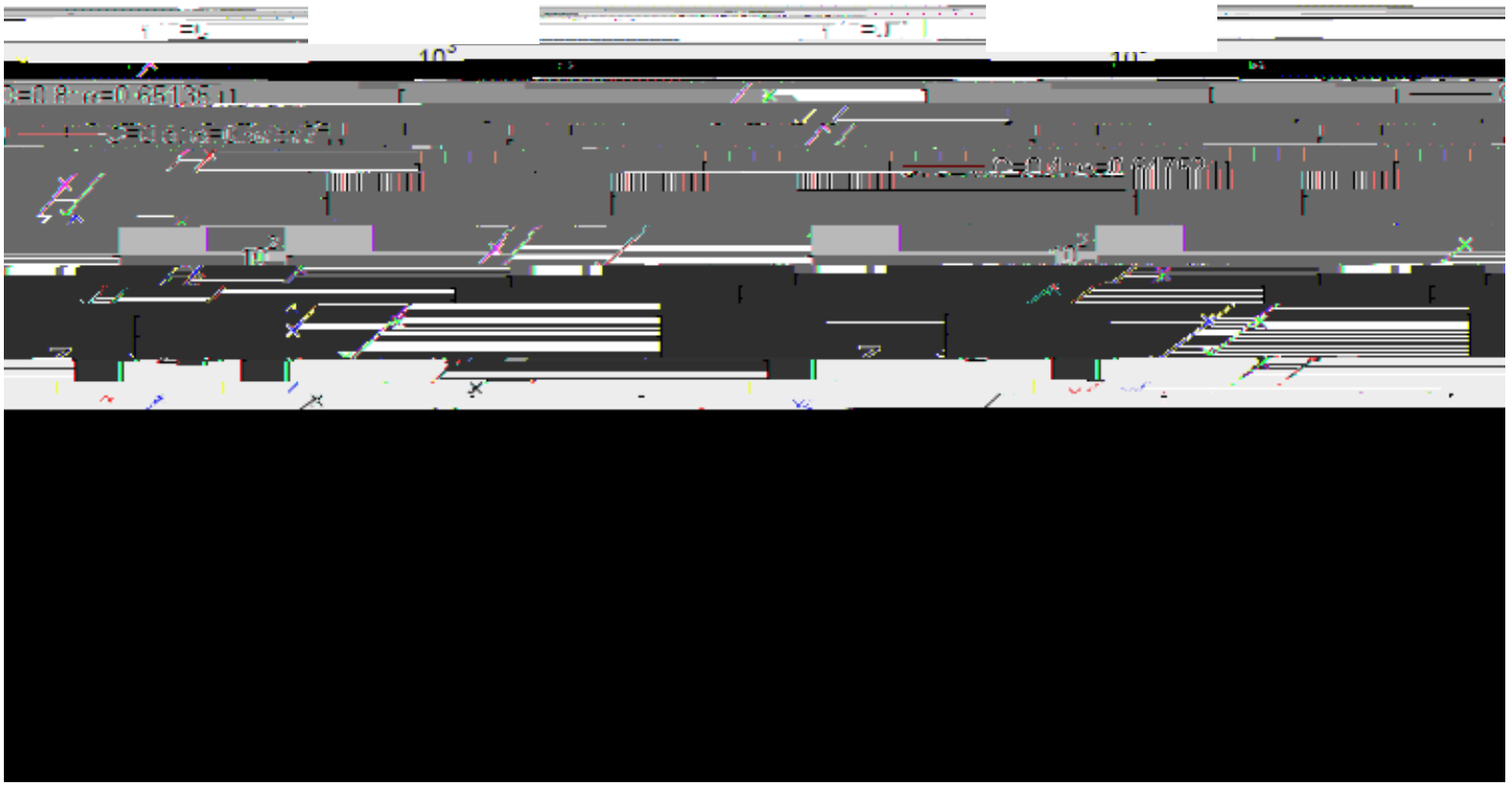
power-law Ehrenfesttime

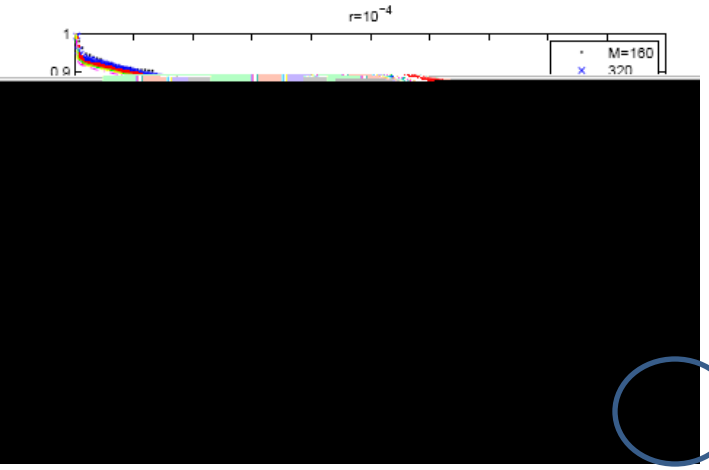
Weyl law from combination of two power laws:

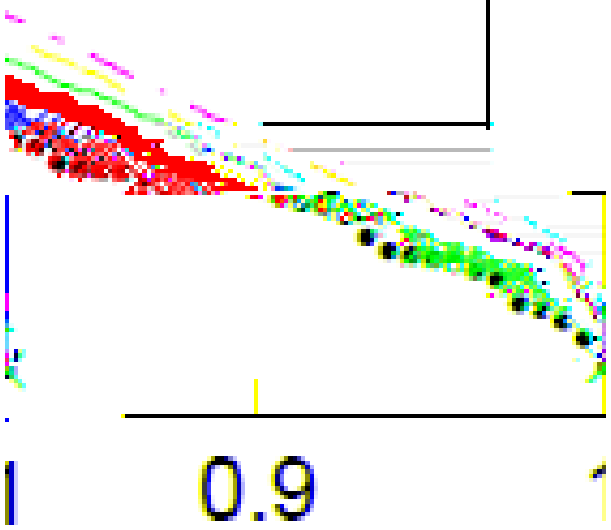
$$S(\ )H\ R'\ \ T'\ e^{\ i\ \ H}\ FR\ \ ^{1}FT$$

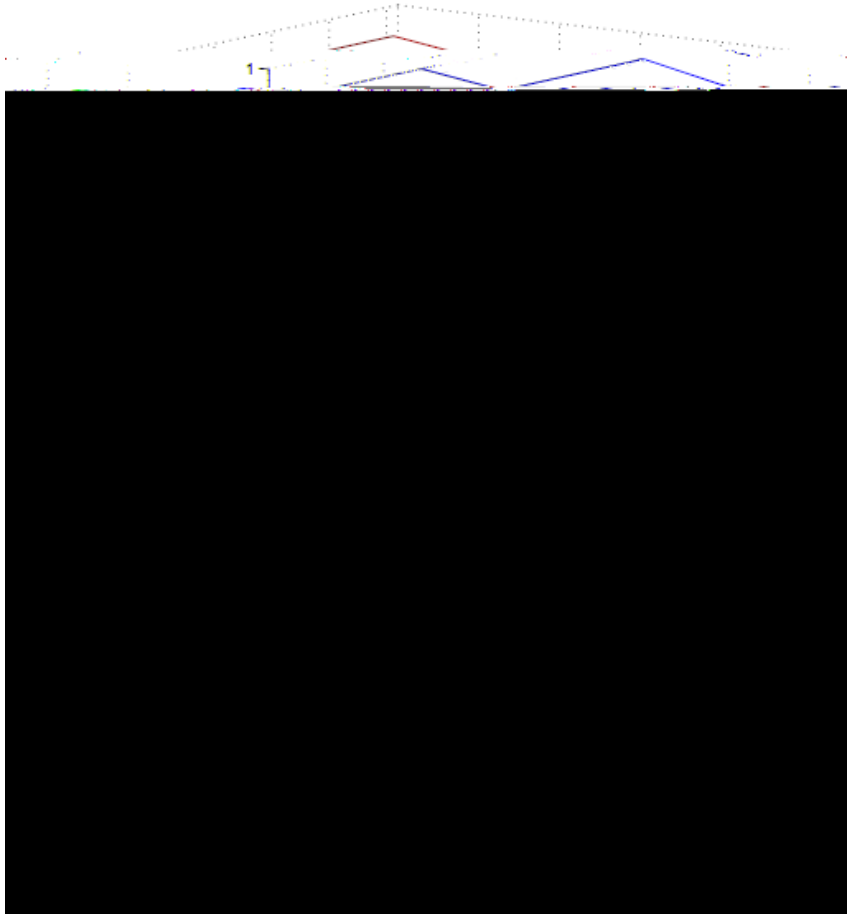



1
0.9
M=160
320



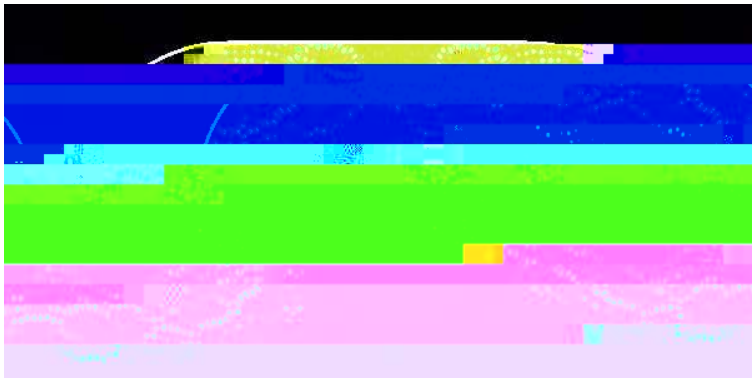

r=10^-4
1
0.9
M=160
320


0.9


1

$$S(\ ) = Z \quad R \quad T\, e^{\,i\ z\ w} FR^{\ 1} FT$$

-
- $n \quad A \quad v\, C$
- $R \ T$
- $M \ N \qquad S \qquad C/v$



M