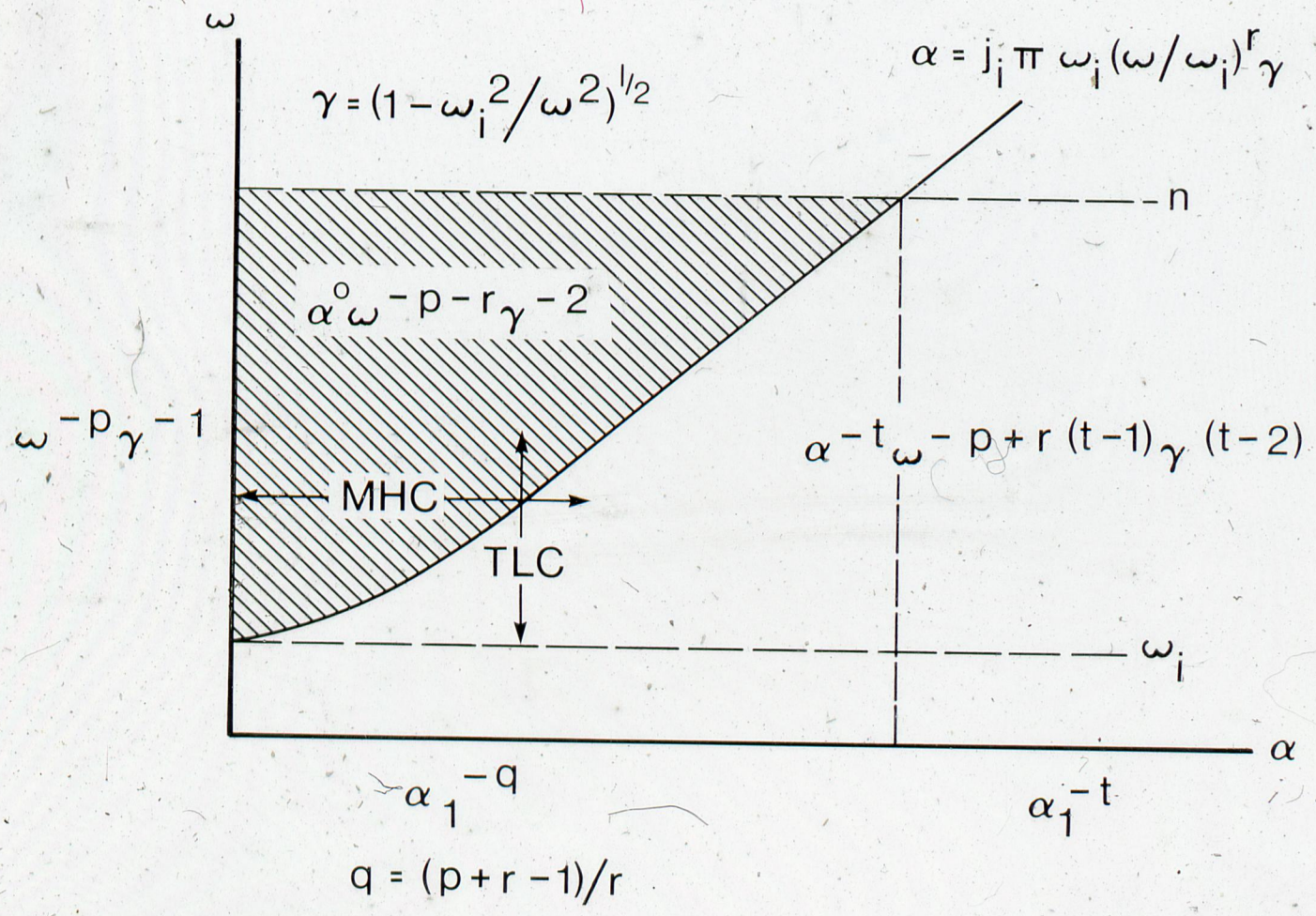
Slide images from the **Walter Munk Papers. SMC 17. Special Collections & Archives, UC San Diego.**

Slide groupings were determined by the original order of Walter Munk's slide collection, and a corresponding inventory. Titles and descriptions were transcribed from Munk's labels and the inventory, with some editing for consistency and clarity.

Garrett and Munk paper, ca. 1972-1974

1. Paper number one - Graph (by Munk)
2. Katz spectra, solid curve - Garret and Munk spectrum graph, 1972
3. Towed lagged Coherence - Graph
4. Graph
5. Three-dimensional graphic representations
6. Spectra by Millard, with Brown CTD - Graph
7. Graph
8. Dropped horizontal coherence - Graph
9. Towed vertical coherence - Graph
10. Top-hat equations
11. Dropped lagged coherence - Graph
12. Cairns letter displacement - Graph, 1973 June 11-12


ω
α = j_i π ω_i (ω/ω_i)^r γ
γ = (1 − ω_i^2/ω^2)^1/2
n
α^o ω^−p−r γ^−2
ω^−p γ^−1
α^−t ω^−p+r(t−1) γ^(t−2)
MHC
TLC
ω_i
α
α_1^−q
α_1^−t
q = (p+r−1)/r

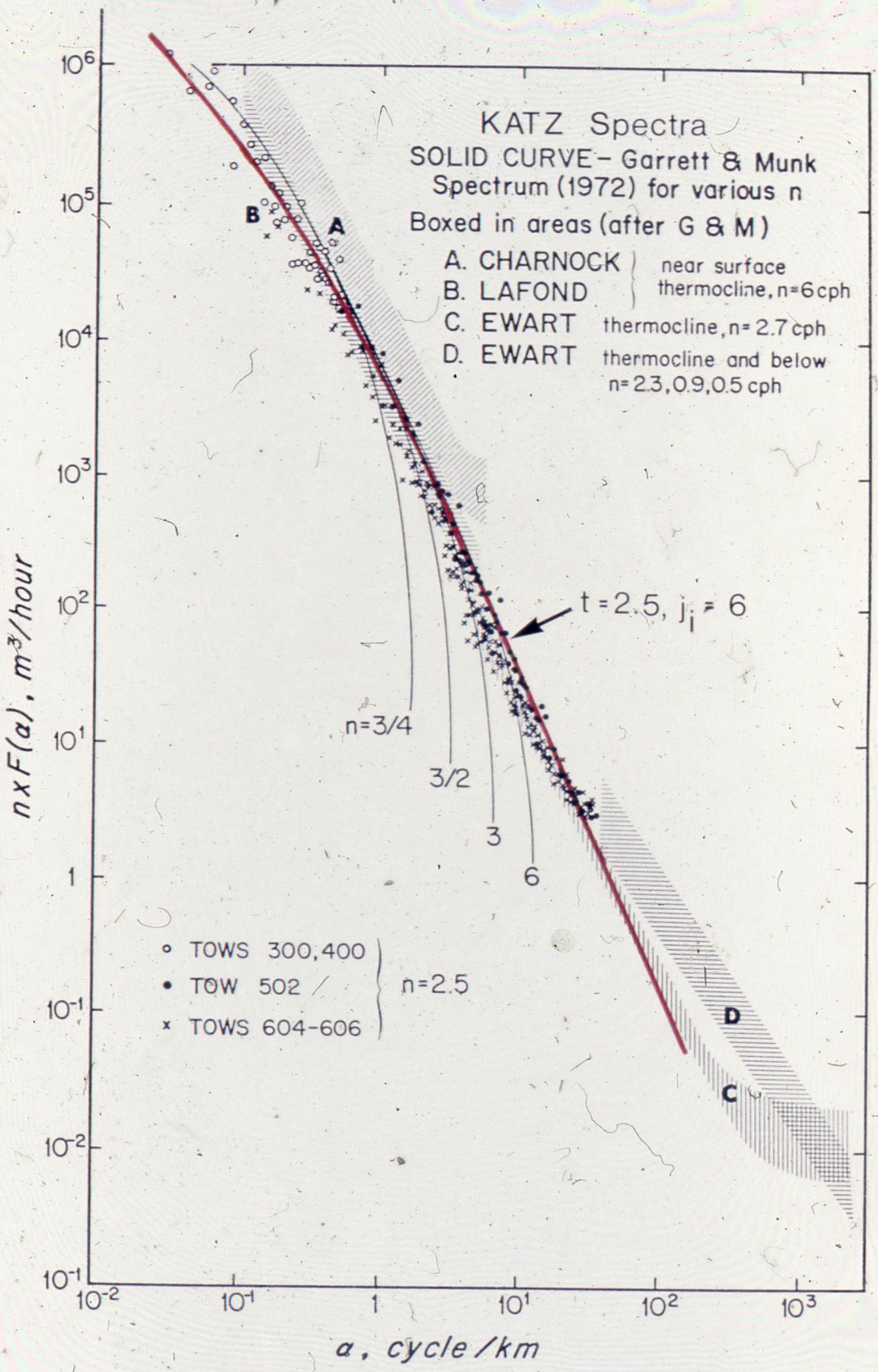
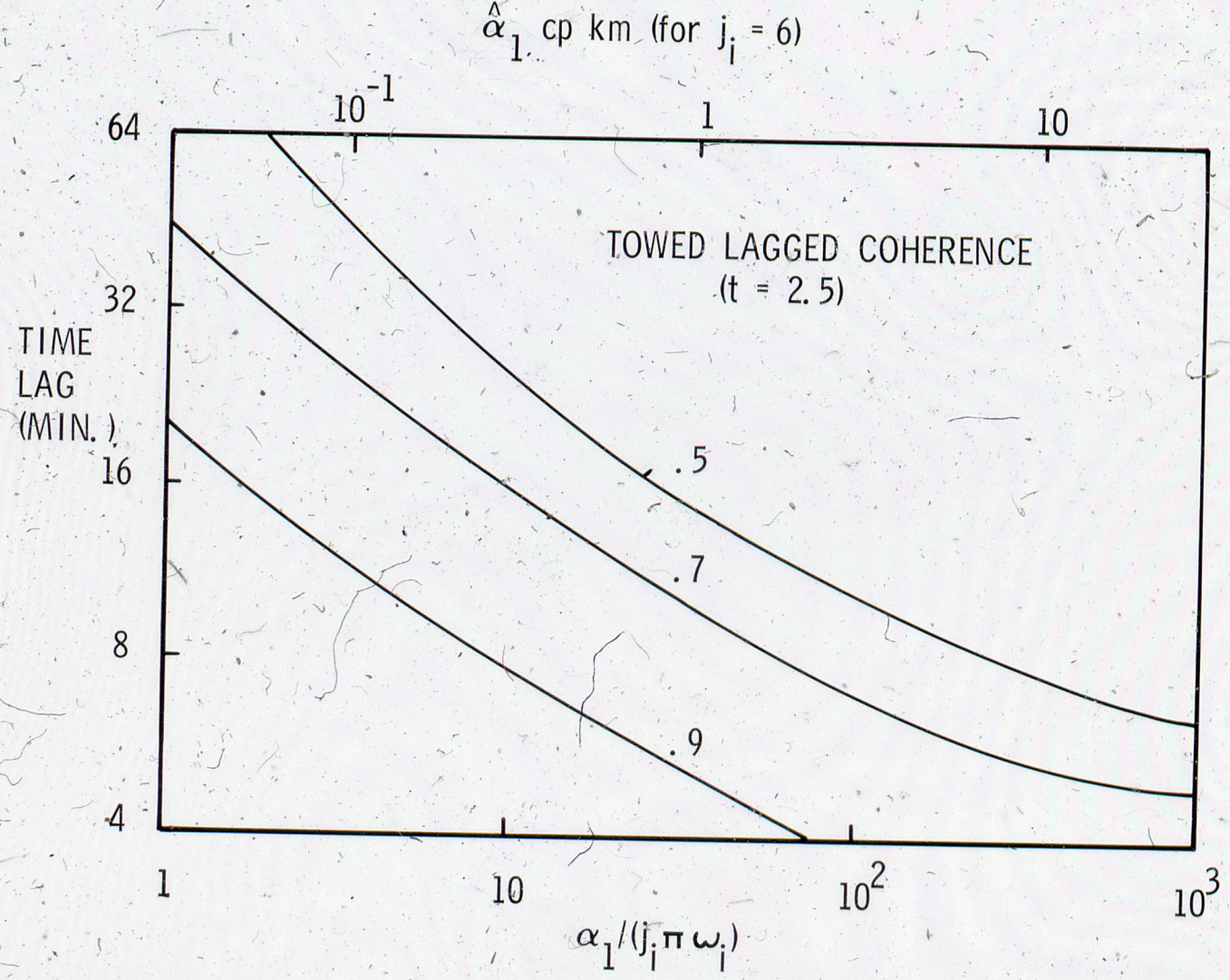
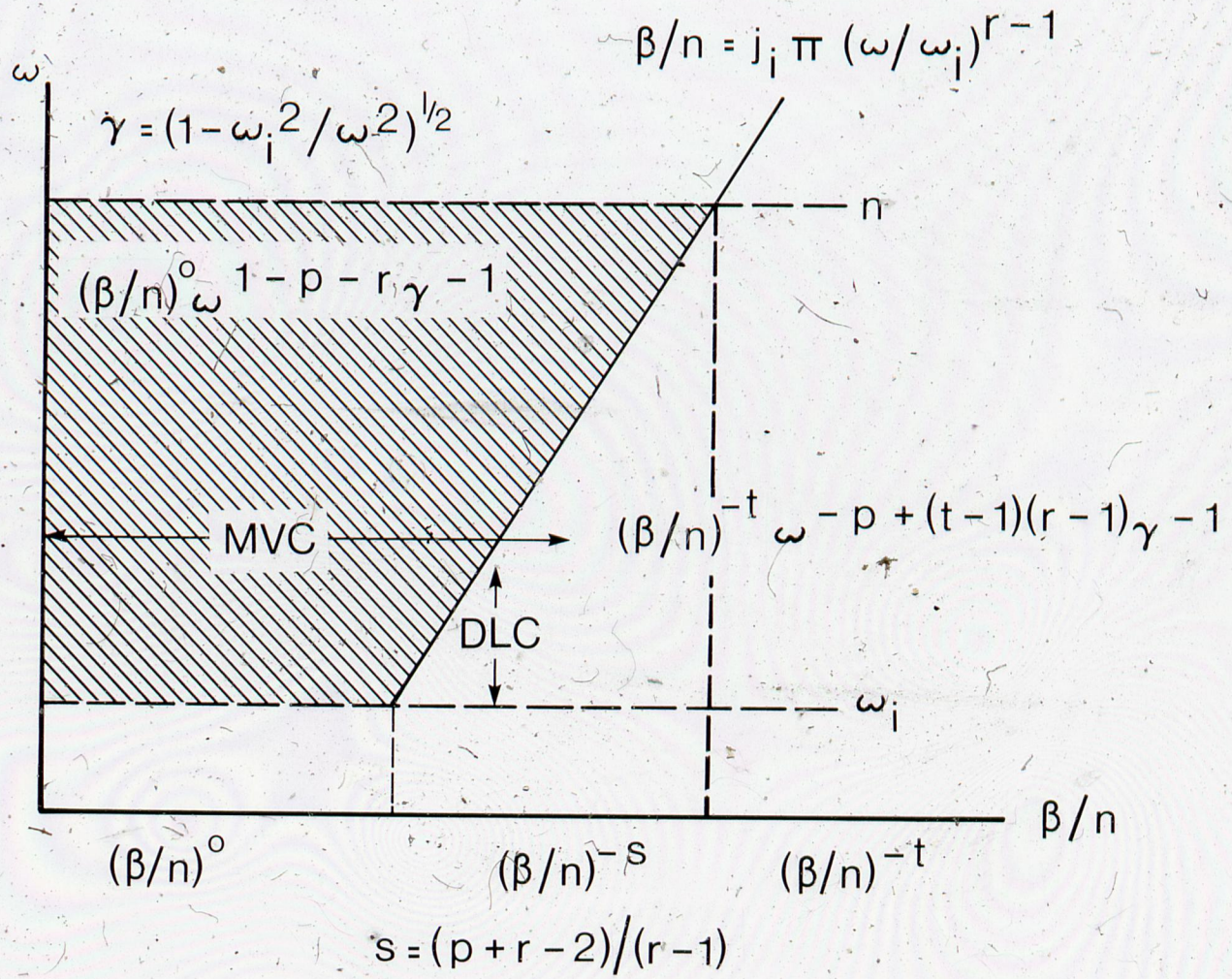
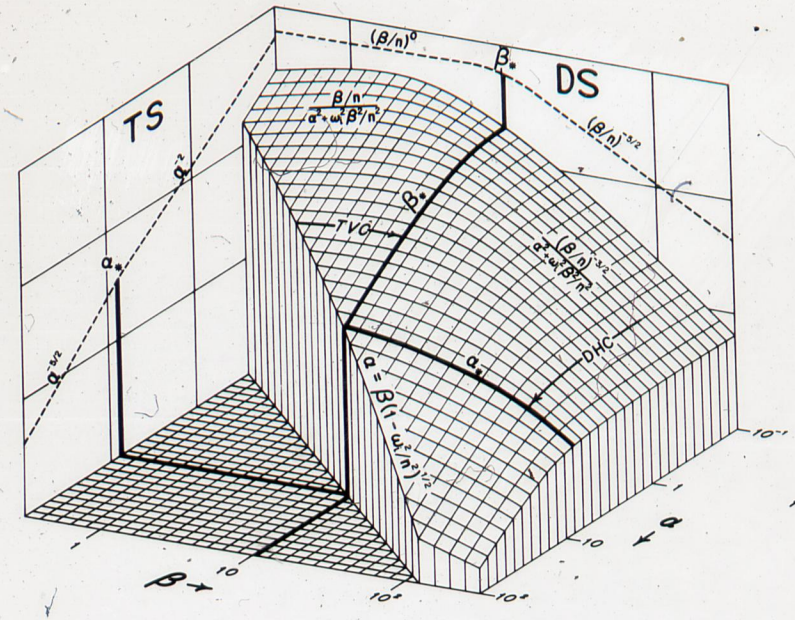
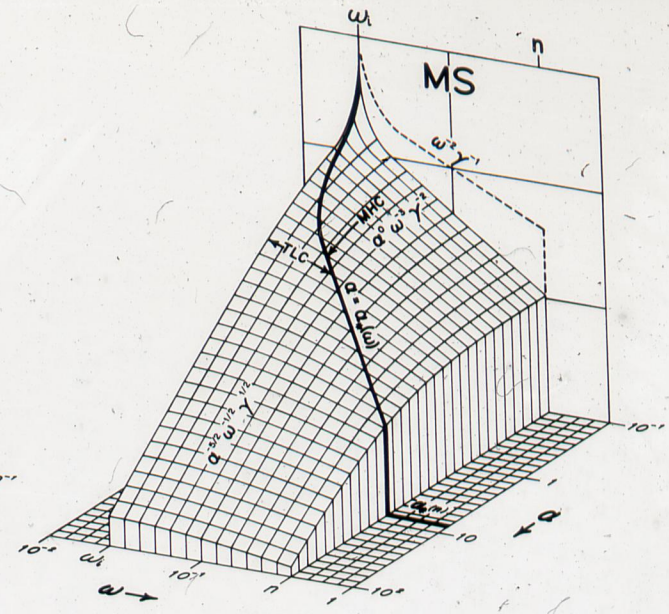

KATZ Spectra
SOLID CURVE – Garrett & Munk Spectrum (1972) for various n
Boxed in areas (after G & M)
A. CHARNOCK
B. LAFOND
near surface thermocline, n=6 cph
C. EWART thermocline, n=2.7 cph
D. EWART thermocline and below n=2.3, 0.9, 0.5 cph
t = 2.5, j_i = 6
n=3/4
3/2
3
6
TOWS 300, 400
TOW 502
TOWS 604-606
n=2.5
A
B
C
D
n x F(a), m³/hour
a, cycle/km
10⁶
10⁵
10⁴
10³
10²
10¹
1
10⁻¹
10⁻²
10⁻¹
10⁻²
10⁻¹
1
10¹
10²
10³

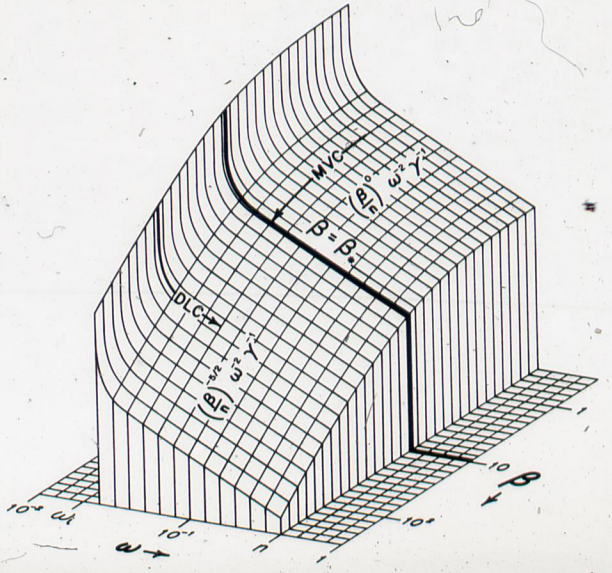
FIGURE 10

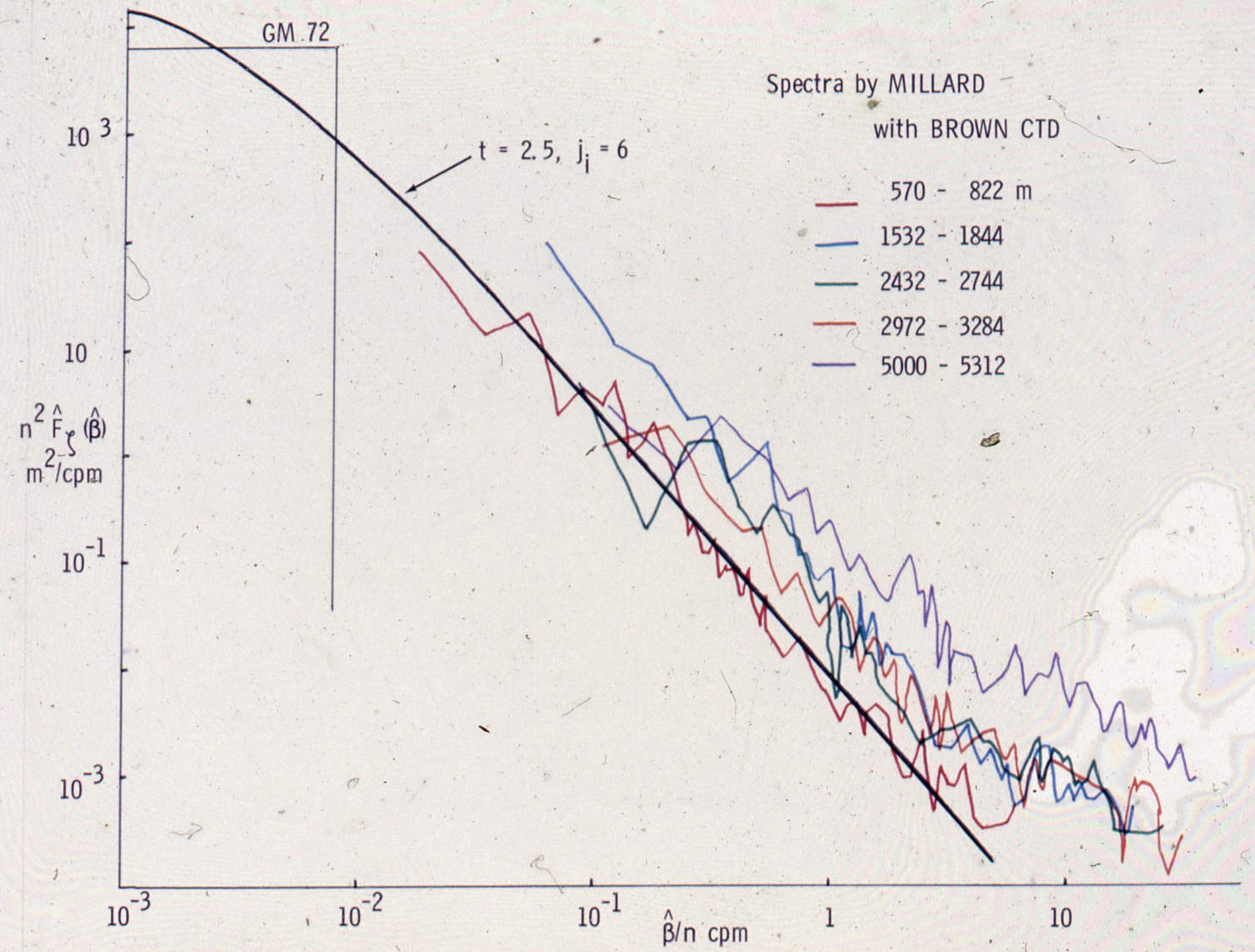

$\hat{\alpha}_1$ cp km (for $j_i = 6$)
10^{-1}
1
10
64
32
16
8
4
TIME LAG (MIN.)
TOWED LAGGED COHERENCE
(t = 2.5)
.5
.7
.9
1
10
10^2
10^3
$\alpha_1/(j_i \pi \omega_i)$

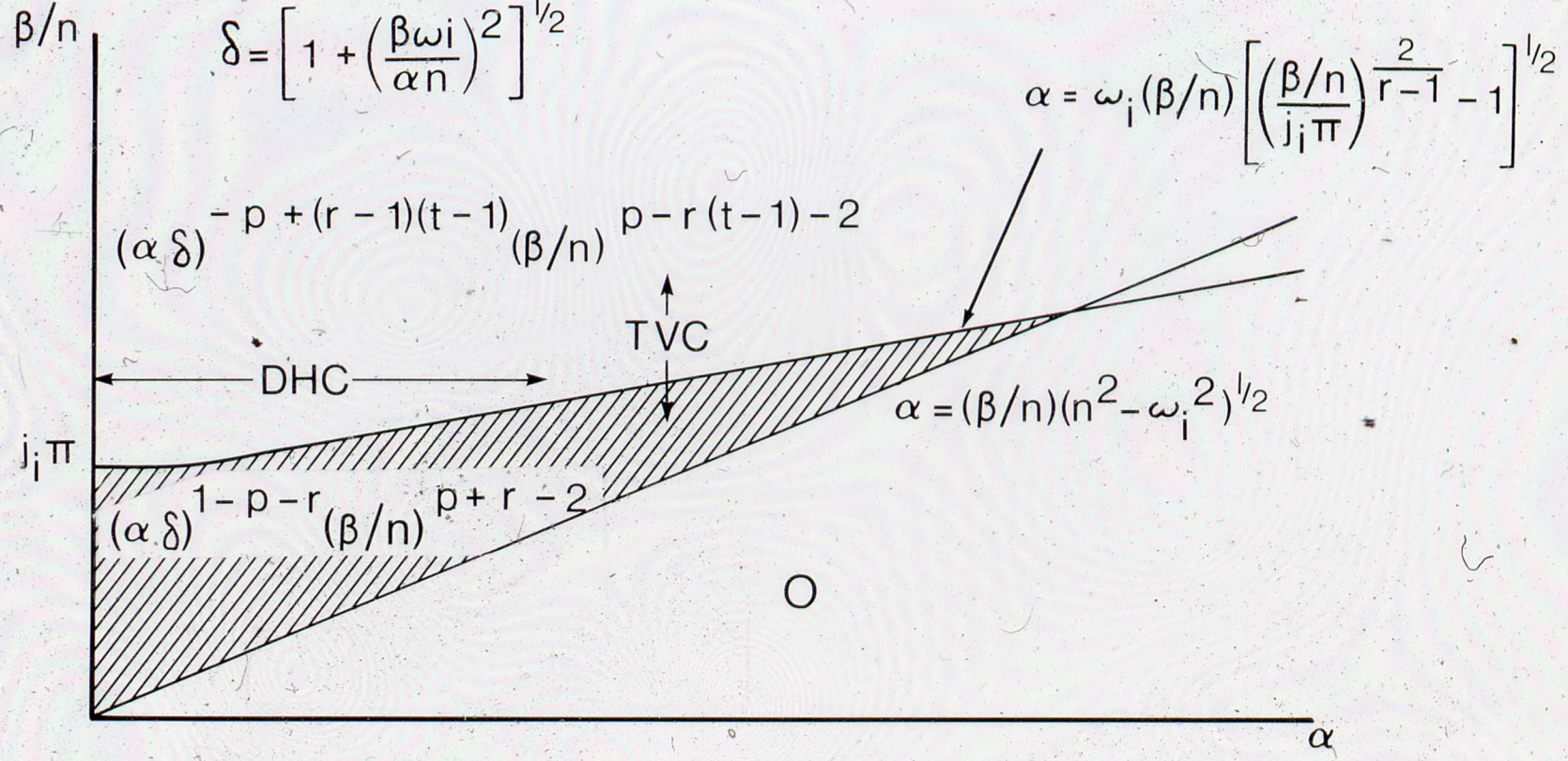

$\beta/n = j_i \pi (\omega/\omega_i)^{r-1}$
ω
$\gamma = (1-\omega_i^2/\omega^2)^{1/2}$
n
$(\beta/n)^o \omega^{1-p-r\gamma-1}$
MVC
$(\beta/n)^{-t} \omega^{-p+(t-1)(r-1)\gamma-1}$
DLC
ω_i
β/n
$(\beta/n)^o$
$(\beta/n)^{-s}$
$(\beta/n)^{-t}$
$s = (p+r-2)/(r-1)$

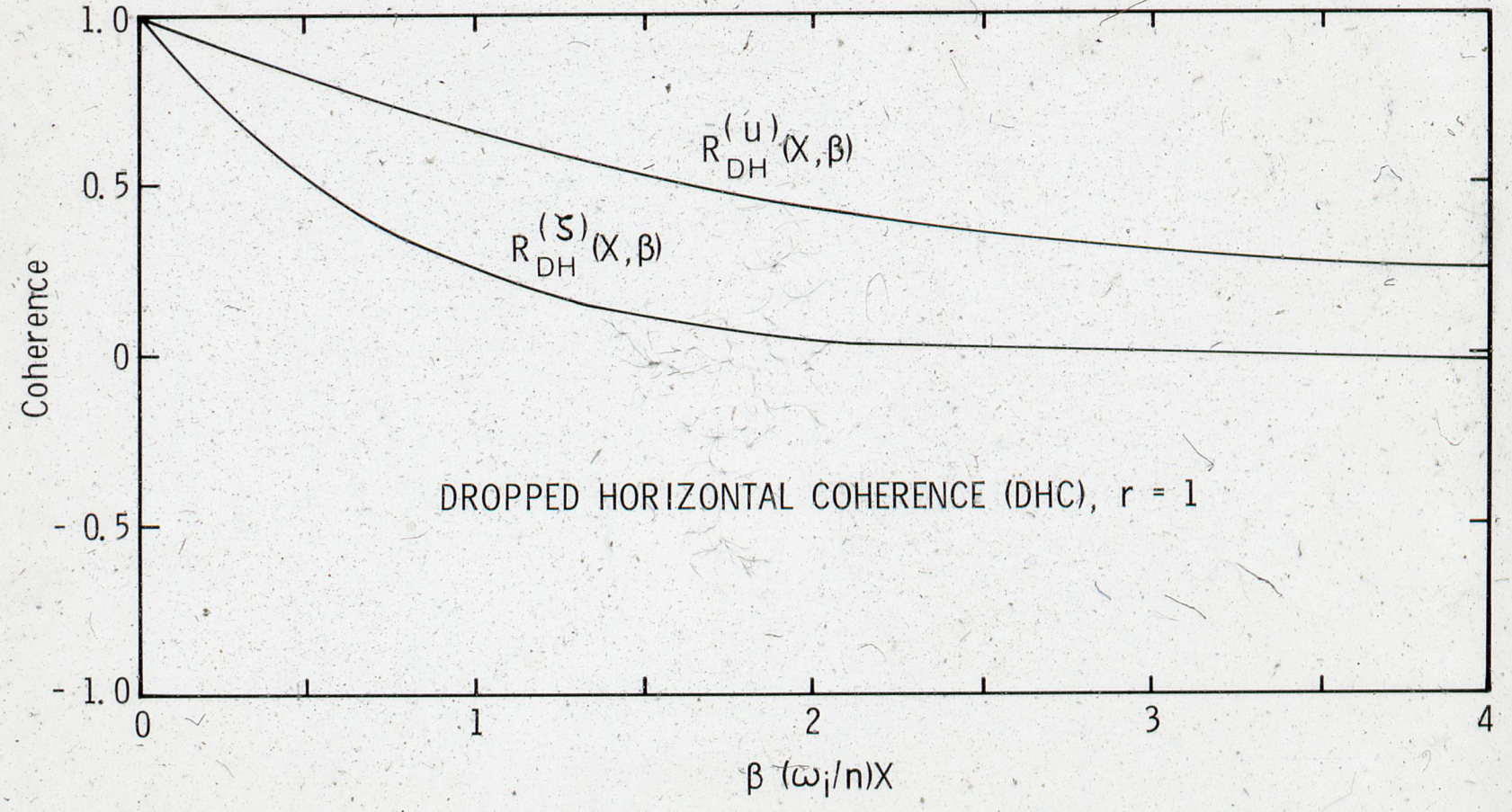

TS
DS
$(\beta/n)^0$
β_*
$\frac{\beta/n}{\alpha^2+\omega^2\beta^2/n^2}$
$(\beta/n)^{3/2}$
α^2
α_*
$\alpha^{3/2}$
β_*
TVC
$\frac{(\beta/n)^{3/2}}{\alpha^2+\omega^2\beta^2/n^2}$
α_*
D+C
$\alpha=\beta(1-\omega^2/n^2)^{1/2}$
10^{-1}
1
10
10^2
α
β

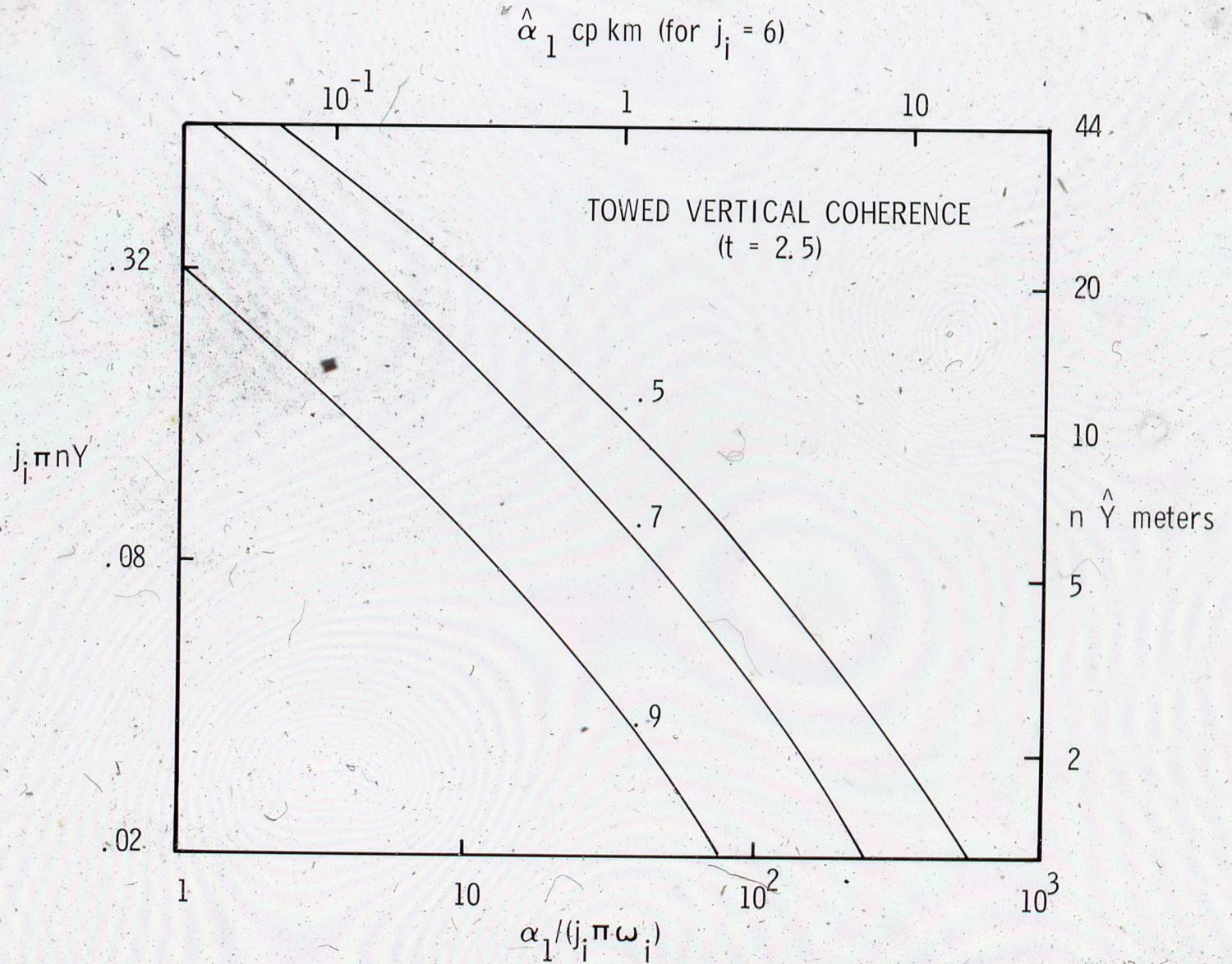

ω_1
n
MS
$\omega=\gamma^{-1}$
MRC
$\alpha^0\omega^{-3}\gamma^{-2}$
TLC
$\alpha=\alpha_t(\omega)$
$\alpha^{-3/2}\omega^{-1/2}\gamma^{-1}$
10^{-1}
10^{-2}
ω_1
10^{-1}
n
1
10
10^2
α
ω


MVC
$\left(\frac{\beta}{n}\right)^0\omega^{-2}\gamma^{-1}$
$\beta=\beta_{tr}$
DLC
$\left(\frac{\beta}{n}\right)^{-3/2}\omega^{-2}\gamma^{-1}$
10^{-2}
ω_1
10^{-1}
n
1
10
10^2
β
ω


GM 72
t = 2.5, j_i = 6
Spectra by MILLARD
with BROWN CTD
570 - 822 m
1532 - 1844
2432 - 2744
2972 - 3284
5000 - 5312
10^3
10
10^{-1}
10^{-3}
$n^2 \hat{F}_\zeta(\hat{\beta})$
m^2/cpm
10^{-3}
10^{-2}
10^{-1}
1
10
$\hat{\beta}$/n cpm


β/n
$\delta = \left[1 + \left(\frac{\beta\omega i}{\alpha n}\right)^2\right]^{1/2}$
$\alpha = \omega_i(\beta/n)\left[\left(\frac{\beta/n}{j_i\pi}\right)^{\frac{2}{r-1}} - 1\right]^{1/2}$
$(\alpha\delta)^{-p+(r-1)(t-1)}(\beta/n)^{p-r(t-1)-2}$
TVC
DHC
$\alpha = (\beta/n)(n^2 - \omega_i^2)^{1/2}$
$j_i\pi$
$(\alpha\delta)^{1-p-r}(\beta/n)^{p+r-2}$
O
α

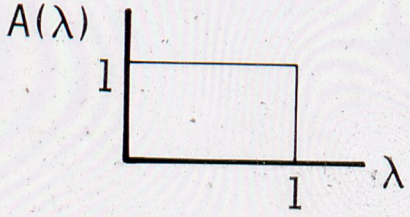

1.0
0.5
0
- 0.5
- 1.0
Coherence
$R_{DH}^{(u)}(X,\beta)$
$R_{DH}^{(v)}(X,\beta)$
DROPPED HORIZONTAL COHERENCE (DHC), r = 1
0
1
2
3
4
$\beta\ (\omega_i/n)X$


$\hat{\alpha}_1$ cp km (for $j_i = 6$)
10^{-1}
1
10
44
TOWED VERTICAL COHERENCE
(t = 2.5)
.32
20
.5
10
$j_i \pi n Y$
.7
n $\hat{Y}$ meters
.08
5
.9
2
.02
1
10
10^2
10^3
$\alpha_1/(j_i \pi \omega_i)$

$$E(\alpha,\omega) = c\mu^{-1} A(\alpha/\mu)\ \Omega(\omega)$$

$$\Omega(\omega) = \omega^{-p} (1 - \omega_i^2/\omega^2)^{-1/2}$$

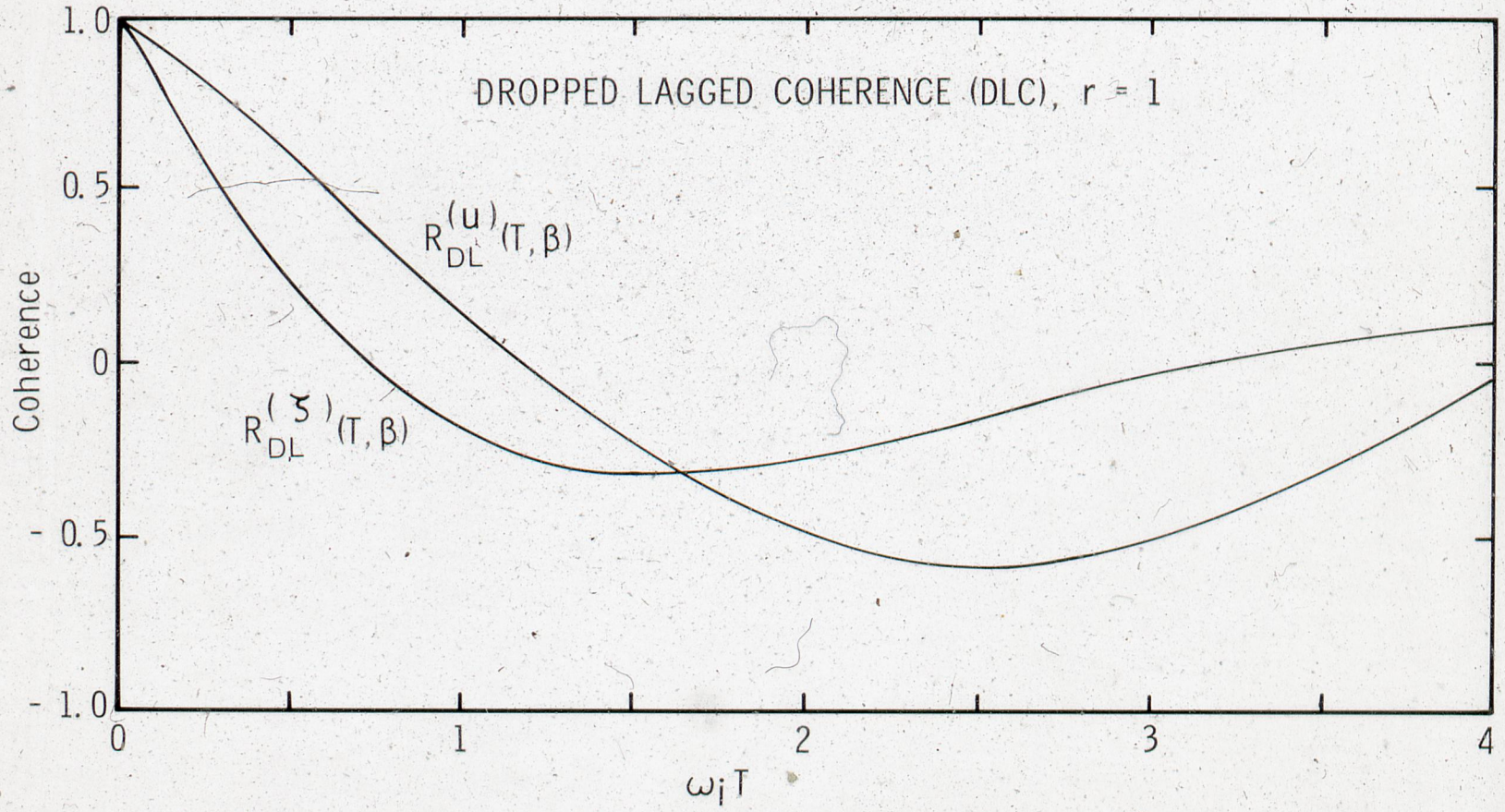
$$\mu = j_i \pi \omega_i\ (\omega/\omega_i)^r\ (1 - \omega_i^2/\omega^2)^{1/2}$$

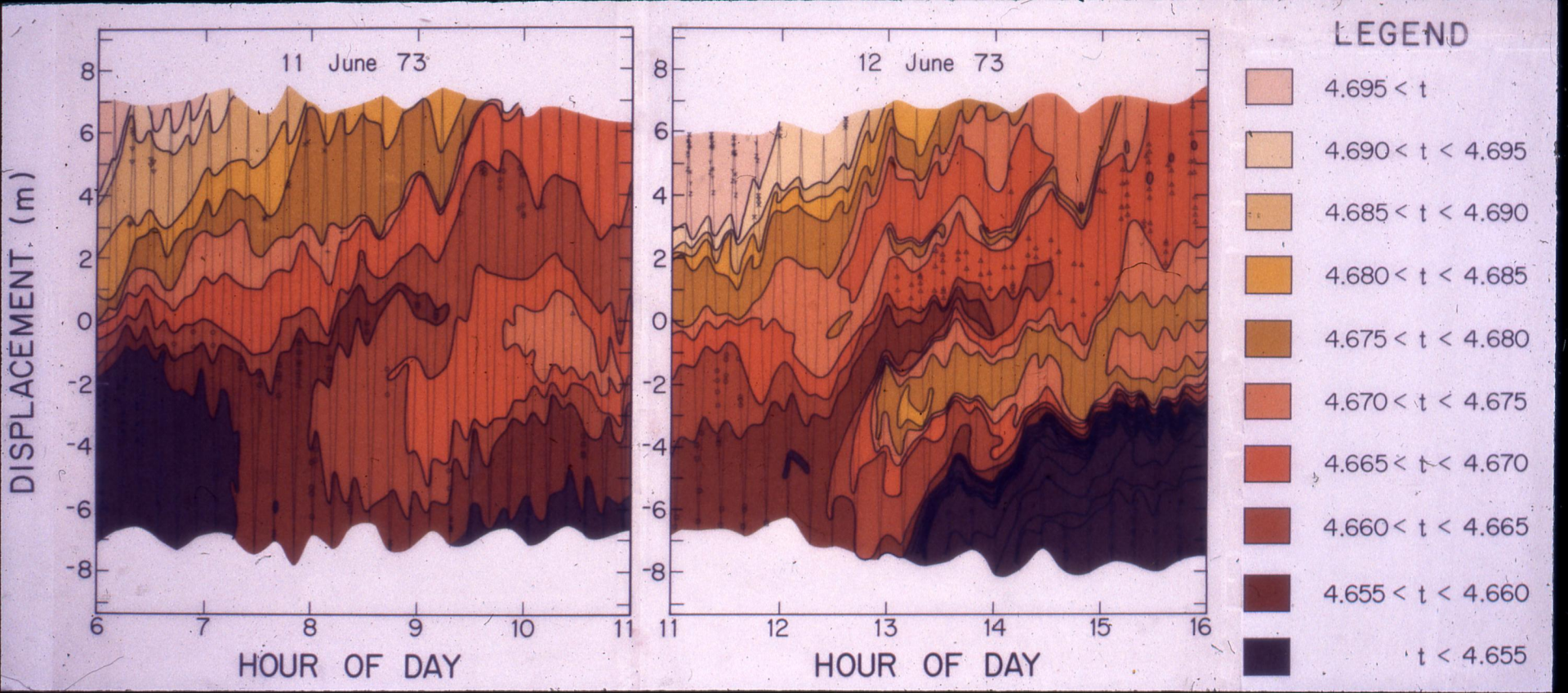


TOP-HAT (GM 72)

OR $A(\lambda) = (t - 1)(1 + \lambda)^{-t}$

$$\beta = \frac{\alpha\ n}{(\omega^2 - \omega_i^2)^{1/2}} \quad , \quad \overline{U^2} = n(1 + \omega_i^2/\omega^2) \quad , \quad \overline{z^2} = n^{-1}(1 - \omega_i^2/\omega^2)$$


DROPPED LAGGED COHERENCE (DLC), r = 1
1.0
0.5
0
- 0.5
- 1.0
Coherence
$R_{DL}^{(u)}(T,\beta)$
$R_{DL}^{(\Sigma)}(T,\beta)$
0
1
2
3
4
$\omega_i T$


11 June 73
12 June 73
DISPLACEMENT (m)
8
6
4
2
0
-2
-4
-6
-8
6
7
8
9
10
11
12
13
14
15
16
HOUR OF DAY
HOUR OF DAY
LEGEND
4.695 < t
4.690 < t < 4.695
4.685 < t < 4.690
4.680 < t < 4.685
4.675 < t < 4.680
4.670 < t < 4.675
4.665 < t < 4.670
4.660 < t < 4.665
4.655 < t < 4.660
t < 4.655