田口先生のSN比

$$\eta = 10log\frac{\frac{1}{2r}(S_\beta - V_e)}{V_N}$$

$$= 10log\frac{\frac{1}{2r}(S_\beta - V_e)}{\frac{(S_{N\times\beta} + S_e)}{(2k-1)}}$$

$$S_N = S_{N\times\beta} + S_e$$

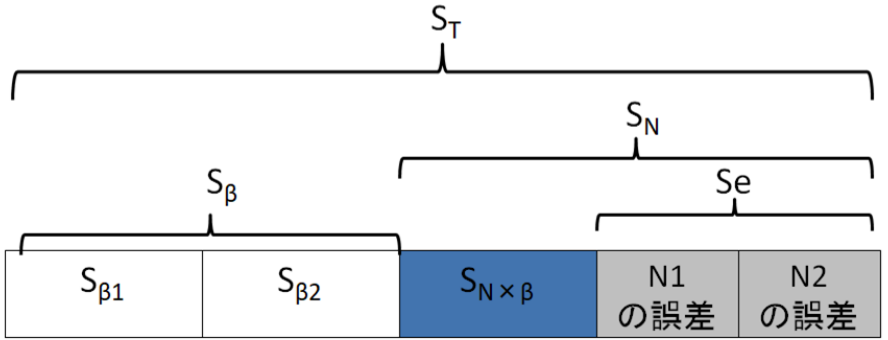
$$= 10log\frac{2k-1}{2r}\frac{(S_\beta - V_e)}{(S_{N\times\beta} + S_e)}$$

何れの式も$\frac{信号}{ノイズ}$であることは同様

変動比型のSN比（エネルギー比型）

$$\eta = 10log\frac{S_\beta}{S_{N\times\beta} + S_e}$$

$\frac{2k-1}{2r}$の係数とV_eの影響がどの程度あるか？



$$\eta = 10log\frac{\frac{1}{2r}(S_\beta - V_e)}{V_N}$$

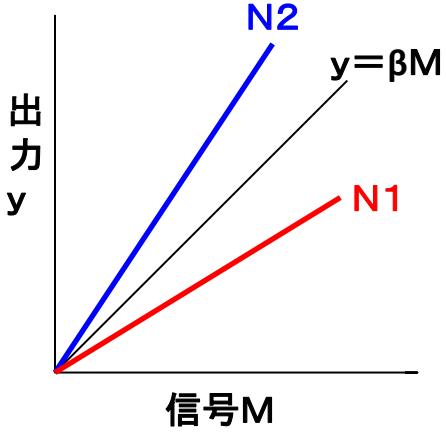
$$= 10log\frac{\frac{1}{2r}(S_\beta - V_e)}{\frac{(S_{N\times\beta} + S_e)}{(2k-1)}}$$

$$= 10log\frac{2k-1}{2r}\frac{(S_\beta - V_e)}{(S_{N\times\beta} + S_e)}$$

$$\eta = 10log\frac{S_\beta}{S_{N\times\beta} + S_e}$$

M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	2r	2k−1	$\frac{2k-1}{2r}$	SN差
1	2	3								28	5	0.17857	−7.5
1	2	3	4	5	6	7	8	9	10	770	19	0.02468	−16.1
10	20	30	.							2800	5	0.00179	−27.5
10	20	30	40	50	60	70	80	90	100	77000	19	0.00025	−36.1

誤差因子あり、誤差因子につきN＝1試行



信号	M_1	M_2	M_3	・・	M_k
N1	y_{11}	y_{12}	y_{13}	・・	y_{1k}
N2	y_{21}	y_{22}	y_{23}	・・	y_{2k}

Source	f	S	V
β	1	S_β	V_β
N×β	1	$S_{N\times\beta}$	$V_{N\times\beta}$
e	2(k−1)	S_e	V_e
T	2k	S_T	
(N)	(2k−1)	(S_N)	(V_N)

$S_N = S_{N\times\beta} + S_e$

$S_T = {y_{11}}^2 + {y_{12}}^2 + \cdots\cdots + {y_{2k}}^2 \quad f = 2k$

$r = {M_1}^2 + {M_2}^2 + \cdots\cdots + {M_k}^2$

$L_1 = M_1 y_{11} + M_2 y_{12} \cdots + M_k y_{1k}$

$L_2 = M_1 y_{21} + M_2 y_{22} \cdots + M_k y_{2k}$

$S_\beta = \frac{(L_1+L_2)^2}{2r} \quad f = 1$

$S_{N\times\beta} = \frac{{L_1}^2+{L_2}^2}{r} - S_\beta = \frac{(L_1-L_2)^2}{2r} \quad f = 2-1 = 1$

$S_e = S_T - S_\beta - S_{N\times\beta} \quad f = 2(k-1) \quad V_e = S_e/2(k-1)$

$S_N = S_{N\times\beta} + S_e \quad f = 2k-1 \quad V_N = S_N/2k-1$

$$\eta = 10log\frac{\frac{1}{2r}(S_\beta - V_e)}{V_N}$$