

DANE

Nr	x [m]	y [m]	Δz [mm]
1	0.2	0.6	12.3
2	0.8	10.5	26.2
3	0.5	20.5	34.9
4	0.5	30.1	66.4
5	10.6	0.0	-9.2
6	10.4	10.6	8.3
7	10.2	20.6	52.2
8	10.0	30.6	73.7
9	20.6	0.0	-53.3
10	20.3	10.2	-23.4
11	20.3	20.7	-4.2
12	20.1	30.1	50.6
13	30.4	0.2	-124.7
14	30.8	10.5	-97.6
15	30.6	20.5	-85.0
16	30.2	30.3	5.7

$$\text{Model 1 : } \Delta z = a_0 + a_1 x + a_2 y + \delta$$

- A(16*3) -

- L(16) -

$$\begin{bmatrix}
 a_0 & a_1 & a_2 \\
 1.00 & 0.20 & 0.60 \\
 1.00 & 0.80 & 10.50 \\
 1.00 & 0.50 & 20.50 \\
 1.00 & 0.50 & 30.10 \\
 1.00 & 10.60 & 0.00 \\
 1.00 & 10.40 & 10.60 \\
 1.00 & 10.20 & 20.60 \\
 1.00 & 10.00 & 30.60 \\
 1.00 & 20.60 & 0.00 \\
 1.00 & 20.30 & 10.20 \\
 1.00 & 20.30 & 20.70 \\
 1.00 & 20.10 & 30.10 \\
 1.00 & 30.40 & 0.20 \\
 1.00 & 30.80 & 10.50 \\
 1.00 & 30.60 & 20.50 \\
 1.00 & 30.20 & 30.30
 \end{bmatrix}
 \begin{bmatrix}
 12.30 \\
 26.20 \\
 34.90 \\
 66.40 \\
 -9.20 \\
 8.30 \\
 52.20 \\
 73.70 \\
 -53.30 \\
 -23.40 \\
 -4.20 \\
 50.60 \\
 -124.70 \\
 -97.60 \\
 -85.00 \\
 5.70
 \end{bmatrix}$$

$$\sigma_0 = 23.60$$

$$\sum vv = 7239.7247$$

$$L_{sr} = -4.1937$$

$$\sum L'L' = 52793.1494 \quad (L' = L_i - L_{sr})$$

$$R^2 = 1 - \frac{\sum vv}{\sum L'L'} = 0.86$$

Niewiadome a odchylenia standardowe

$$\begin{array}{l} a_0 \quad 7.706 \quad 12.957 \\ a_1 \quad -3.709 \quad 0.527 \quad + \\ a_2 \quad 2.943 \quad 0.526 \quad + \end{array}$$

Model 2 : $\Delta z = a_0 + a_1x + a_2y + a_3x^2 + a_4y^2 + a_5xy + \delta$

- A(16*6) -

- L(16) -

	a_0	a_1	a_2	a_3	a_4	a_5	
	1.00	0.20	0.60	0.04	0.36	0.12	12.30
	1.00	0.80	10.50	0.64	110.25	8.40	26.20
	1.00	0.50	20.50	0.25	420.25	10.25	34.90
	1.00	0.50	30.10	0.25	906.01	15.05	66.40
	1.00	10.60	0.00	112.36	0.00	0.00	-9.20
	1.00	10.40	10.60	108.16	112.36	110.24	8.30
	1.00	10.20	20.60	104.04	424.36	210.12	52.20
	1.00	10.00	30.60	100.00	936.36	306.00	73.70
	1.00	20.60	0.00	424.36	0.00	0.00	-53.30
	1.00	20.30	10.20	412.09	104.04	207.06	-23.40
	1.00	20.30	20.70	412.09	428.49	420.21	-4.20
	1.00	20.10	30.10	404.01	906.01	605.01	50.60
	1.00	30.40	0.20	924.16	0.04	6.08	-124.70
	1.00	30.80	10.50	948.64	110.25	323.40	-97.60
	1.00	30.60	20.50	936.36	420.25	627.30	-85.00
	1.00	30.20	30.30	912.04	918.09	915.06	5.70

$$\begin{array}{l} \sigma_0 \quad = \quad 10.97 \\ \sum vv \quad = \quad 1203.9937 \\ L_{sr} \quad = \quad -4.1937 \\ \sum L'L' \quad = \quad 52793.1494 \quad (L' = L_i - L_{sr}) \\ R^2 = 1 - \frac{\sum vv}{\sum L'L'} = 0.98 \end{array}$$

Niewiadome a odchylenia standardowe

$$\begin{array}{l} a_0 \quad 13.726 \quad 9.122 \quad + \\ a_1 \quad 0.108 \quad 0.947 \\ a_2 \quad -0.259 \quad 0.938 \\ a_3 \quad -0.158 \quad 0.027 \quad + \\ a_4 \quad 0.069 \quad 0.027 \quad + \\ a_5 \quad 0.071 \quad 0.022 \quad + \end{array}$$

Model 3 : $\Delta z = a_0 + a_3x^2 + a_4y^2 + a_5xy + \delta$

- A (16*4) -

- L (16) -

	a_0	a_3	a_4	a_5	
1.00	0.04	0.36	0.12		12.30
1.00	0.64	110.25	8.40		26.20
1.00	0.25	420.25	10.25		34.90
1.00	0.25	906.01	15.05		66.40
1.00	112.36	0.00	0.00		-9.20
1.00	108.16	112.36	110.24		8.30
1.00	104.04	424.36	210.12		52.20
1.00	100.00	936.36	306.00		73.70
1.00	424.36	0.00	0.00		-53.30
1.00	412.09	104.04	207.06		-23.40
1.00	412.09	428.49	420.21		-4.20
1.00	404.01	906.01	605.01		50.60
1.00	924.16	0.04	6.08		-124.70
1.00	948.64	110.25	323.40		-97.60
1.00	936.36	420.25	627.30		-85.00
1.00	912.04	918.09	915.06		5.70

$$\sigma_0 = 10.07$$

$$\sum vv = 1216.2138$$

$$L_{sr} = -4.1937$$

$$\sum L'L' = 52793.1494 \quad (L' = L_i - L_{sr})$$

$$R^2 = 1 - \frac{\sum vv}{\sum L'L'} = 0.98$$

Niewiadome a odchylenia standardowe

a_0	12.950	4.748	+
a_3	-0.154	0.011	+
a_4	0.062	0.011	+
a_5	0.069	0.018	+