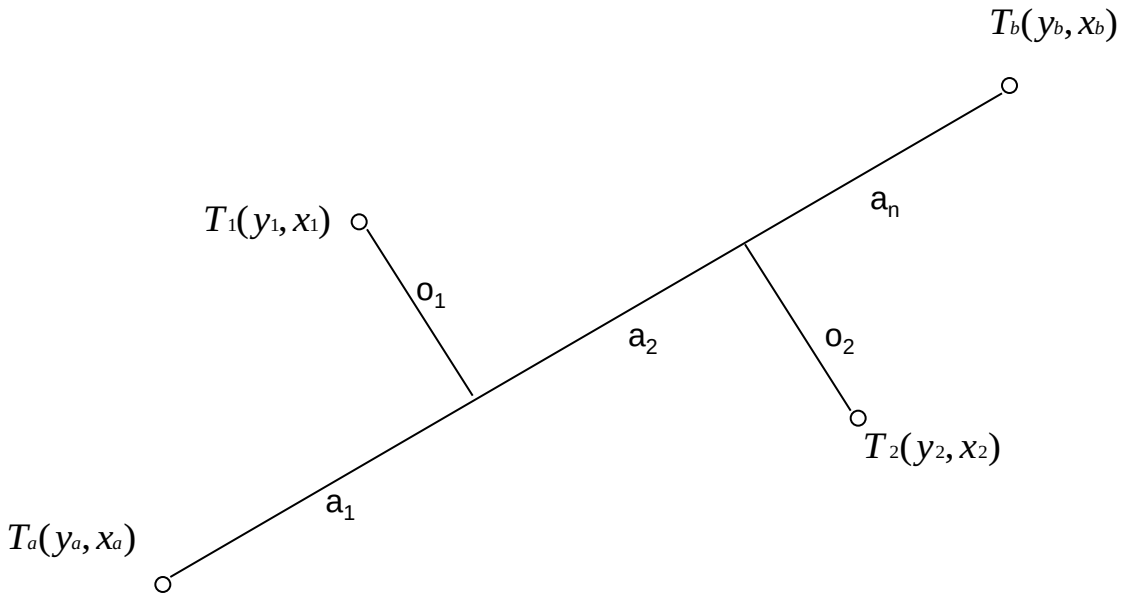
Male točke na okomici

Tomislav Sliepčević

Male točke na okomici

Mala točka po svom položaju može biti postavljena na ordinati koja je okomita na liniju snimanja.

Ta mala točka bit će definirana kao **mala točka na okomici**.



Položaj male točke bit će definiran svojim mjerenim relativnim koordinatama.

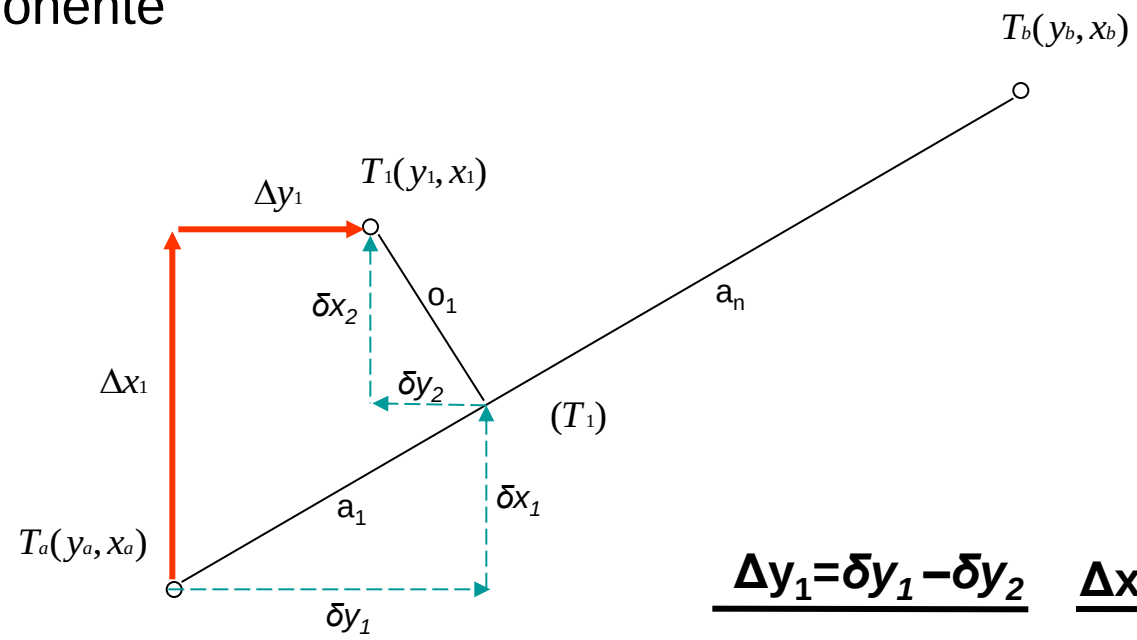
Relativne koordinate male točke na okomici su apscise a_i, i ordinate o_i.

Male točke na okomici

Male točke na okomici mogu s obzirom na liniju T_aT_b biti na lijevoj ili desnoj strani od smjera snimanja i računanja.

a) Mala točka s lijeve strane od smjera računanja

- (T_1) nožište male točke na okomici = mala točka na liniji
- Koordinatne razlike Δy_1 i Δx_1 mogu se izraziti s dvije komponente



$$\Delta y_1 = \delta y_1 - \delta y_2 \qquad \Delta x_1 = \delta x_1 + \delta x_2$$

Male točke na okomici

Računanje komponenata koordinatnih razlika :

$$\delta y_1 : a_1 = (y_b - y_a) : [a] \Rightarrow \delta y_1 = \frac{(y_b - y_a)}{[a]} \cdot a_1 \qquad \sin\nu = \frac{y_b - y_a}{[a]} = p$$

$$\delta x_1 : a_1 = (x_b - x_a) : [a] \Rightarrow \delta x_1 = \frac{(x_b - x_a)}{[a]} \cdot a_1 \qquad \cos\nu = \frac{x_b - x_a}{[a]} = q$$

$$\delta y_2 : o_1 = (x_b - x_a) : [a] \Rightarrow \delta y_2 = \frac{(x_b - x_a)}{[a]} \cdot o_1$$

$$\delta x_2 : o_1 = (y_b - y_a) : [a] \Rightarrow \delta x_2 = \frac{(y_b - y_a)}{[a]} \cdot o_1$$

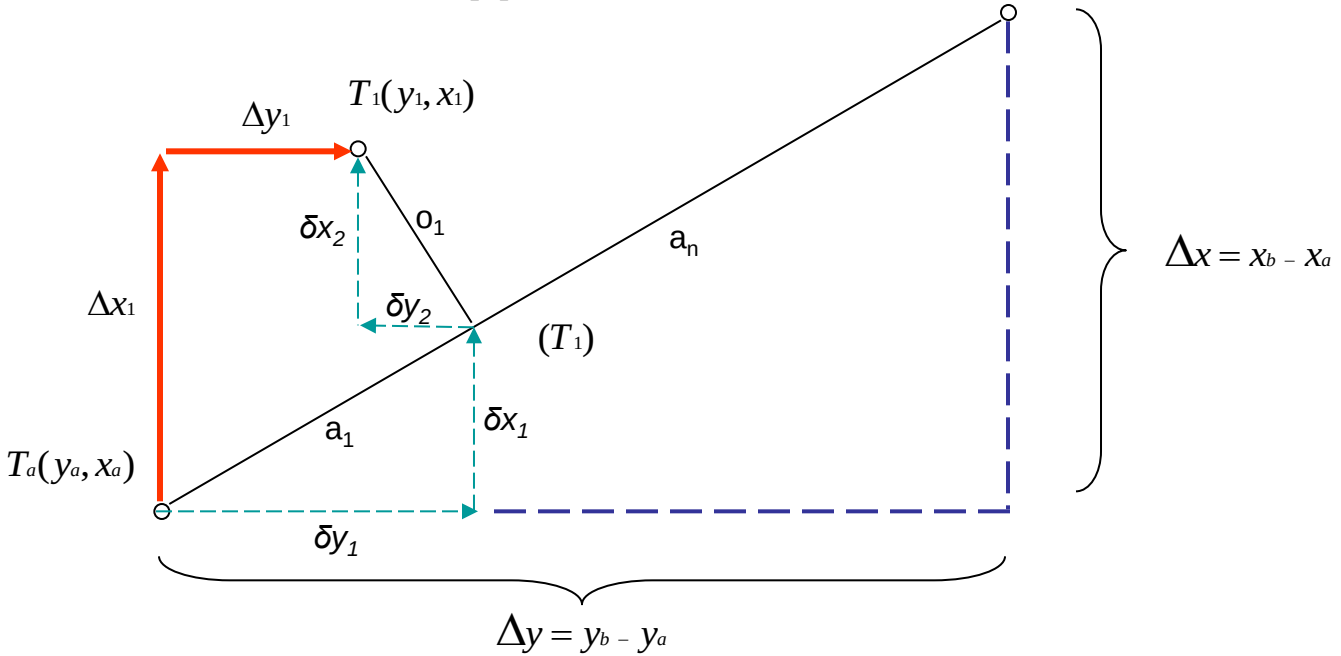
$$\delta y_1 = p \cdot a_1$$

$$\delta x_1 = q \cdot a_1$$

Koord.razlike male točke – nožišta na liniji

$$\delta y_2 = q \cdot o_1$$

$$\delta x_2 = p \cdot o_1$$



$$\Delta y_1 = \delta y_1 - \delta y_2 = p \cdot a_1 - q \cdot o_1$$

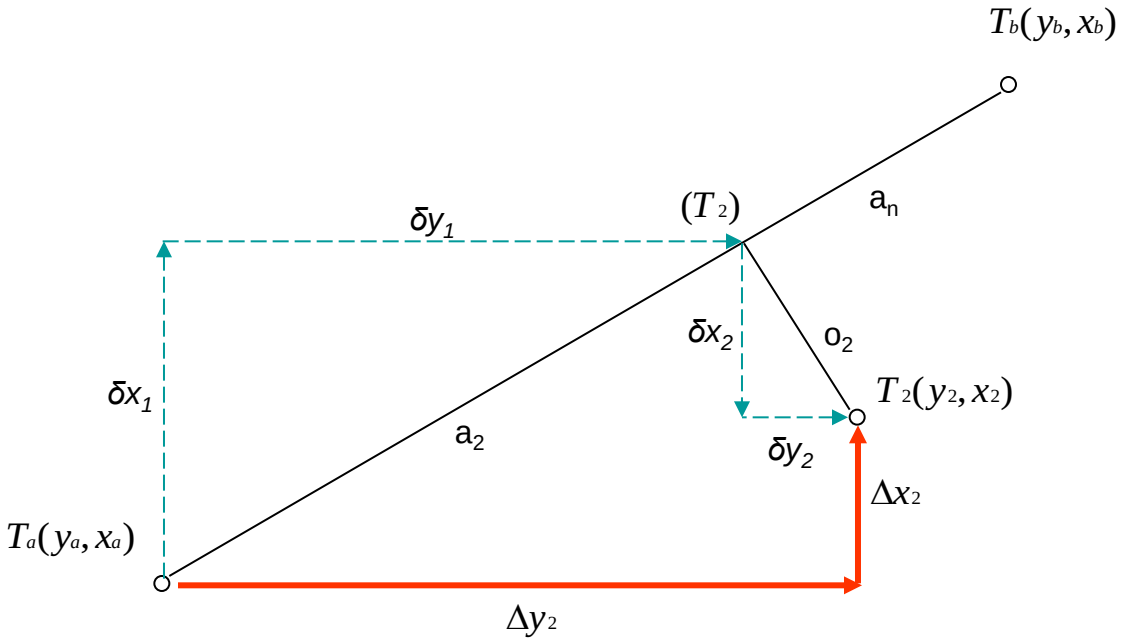
$$\Delta x_1 = \delta x_1 + \delta x_2 = q \cdot a_1 + p \cdot o_1$$

Male točke na okomici

Male točke na okomici mogu s obzirom na liniju T_aT_b biti na lijevoj ili desnoj strani od smjera snimanja i računanja.

b) Mala točka s desne strane od smjera računanja

- (T_2) nožište male točke na okomici = mala točka na liniji
- Koordinatne razlike Δy_2 i Δx_2 mogu se izraziti s dvije komponente



$$\Delta y_2 = \delta y_1 + \delta y_2$$

$$\Delta x_2 = \delta x_1 - \delta x_2$$

Male točke na okomici

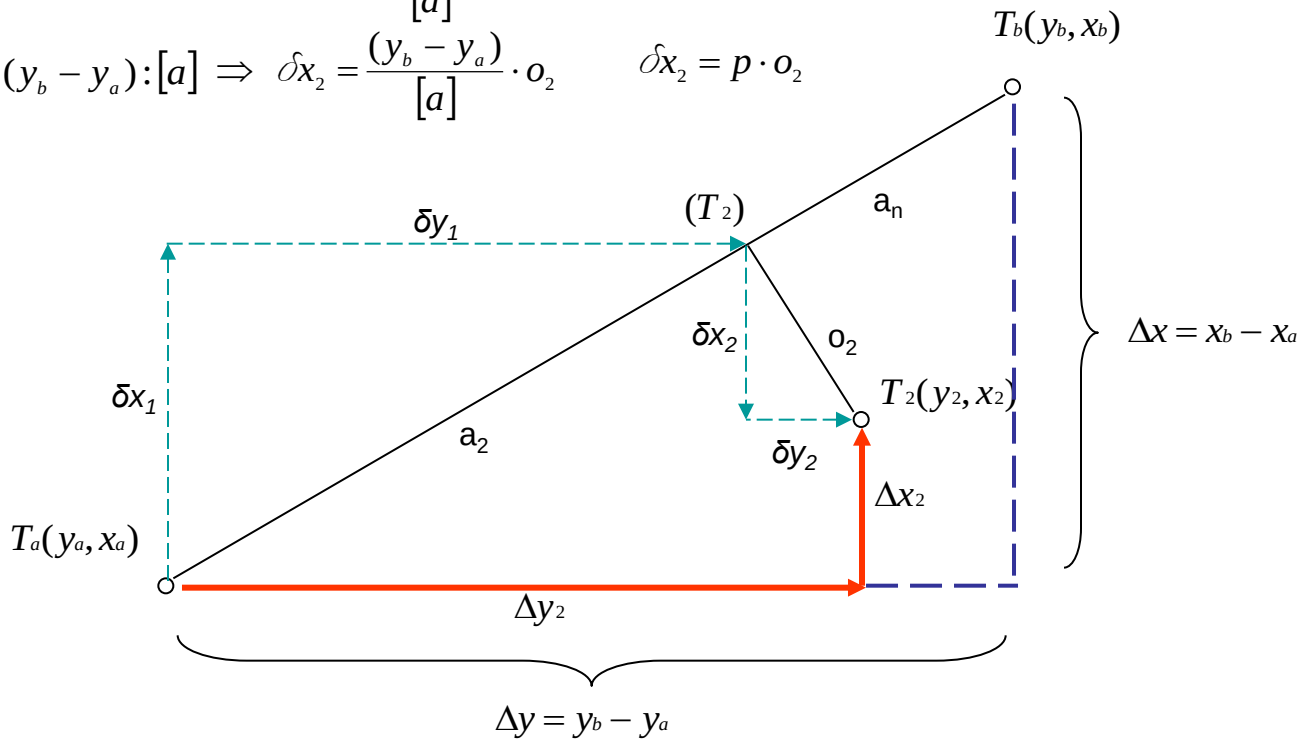
Računanje komponenata koordinatnih razlika :

$$\delta y_1 : a_2 = (y_b - y_a) : [a] \Rightarrow \delta y_1 = \frac{(y_b - y_a)}{[a]} \cdot a_2 \qquad \delta y_1 = p \cdot a_2$$

$$\delta x_1 : a_2 = (x_b - x_a) : [a] \Rightarrow \delta x_1 = \frac{(x_b - x_a)}{[a]} \cdot a_2 \qquad \delta x_1 = q \cdot a_2$$

$$\delta y_2 : o_2 = (x_b - x_a) : [a] \Rightarrow \delta y_2 = \frac{(x_b - x_a)}{[a]} \cdot o_2 \qquad \delta y_2 = q \cdot o_2$$

$$\delta x_2 : o_2 = (y_b - y_a) : [a] \Rightarrow \delta x_2 = \frac{(y_b - y_a)}{[a]} \cdot o_2 \qquad \delta x_2 = p \cdot o_2$$



$$\Delta y_2 = \delta y_1 + \delta y_2 = p \cdot a_2 + q \cdot o_2$$

$$\Delta x_2 = \delta x_1 - \delta x_2 = q \cdot a_2 - p \cdot o_2$$

Male točke na okomici

Male točke s lijeve strane

$$\Delta y_1 = p \cdot a_1 - q \cdot o_1$$

$$\Delta x_1 = q \cdot a_1 + p \cdot o_1$$

Male točke s desne strane

$$\Delta y_2 = p \cdot a_2 + q \cdot o_2$$

$$\Delta x_2 = q \cdot a_2 - p \cdot o_2$$

Univerzalni izrazi

$$\Delta y_i = p \cdot a_i + q \cdot o_i$$

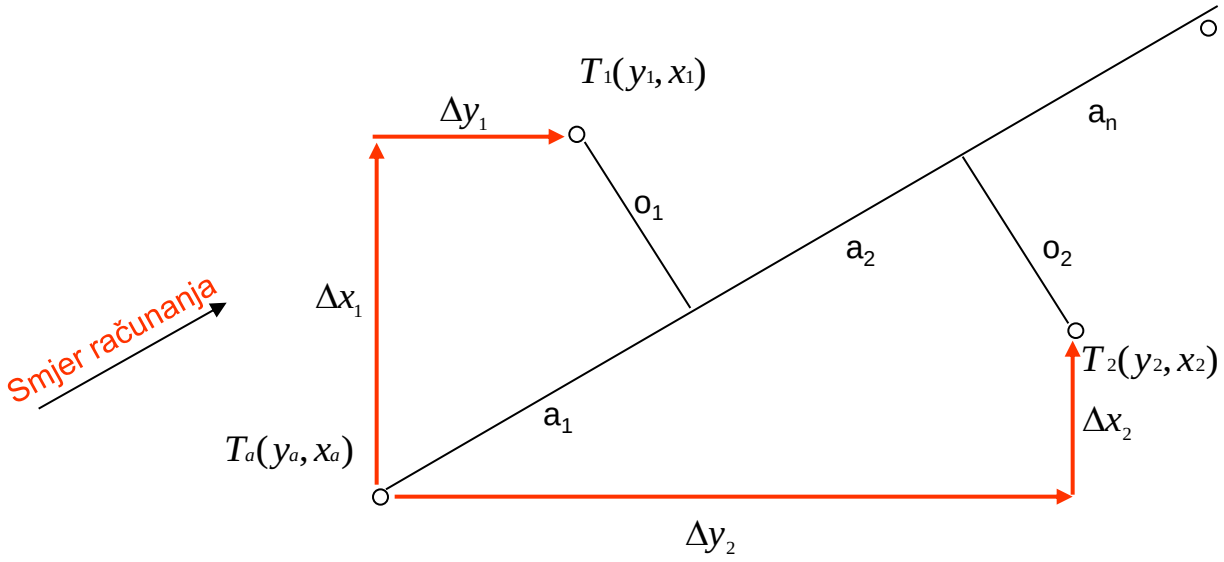
$$i = 1,2,\ldots n$$

$$\Delta x_i = q \cdot a_i - p \cdot o_i$$

$$i = 1,2,\ldots n$$

Napomena:

Ako je točka s lijeve strane ordinata će dobiti negativni predznak



Definitivne koordinate malih točaka na okomici : $y_i = y_a + \Delta y_i$ $x_i = x_a + \Delta x_i$

Male točke na okomici

Nožišta malih točaka na okomici su ujedno i male točke na liniji : (T_1) ; (T_2)

$$(\Delta y_1) = a_1 \cdot \sin \nu_a^b$$

$$(\Delta y_2) = o_1 \cdot \sin \nu_{(1)}^1 = o_1 \cdot \sin(270^\circ + \nu_a^b) = -o_1 \cdot \cos \nu_a^b$$

$$\Delta y_1 = a_1 \cdot \sin \nu_a^b - o_1 \cdot \cos \nu_a^b$$

$$\Delta y_1 = p \cdot a_1 - q \cdot o_1$$

$$y_1 = y_a + \Delta y_1$$

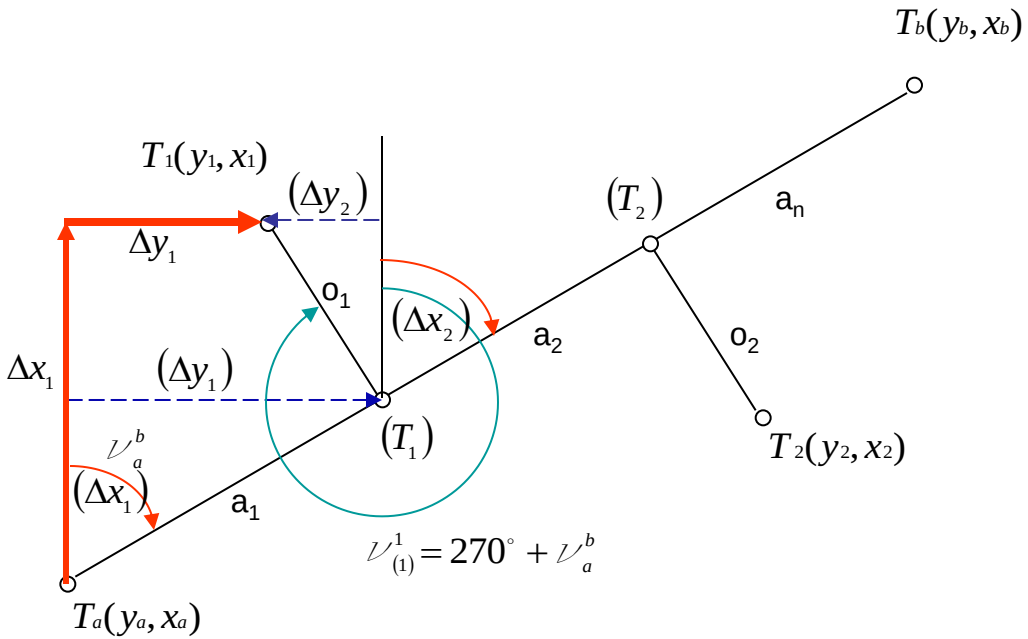
$$(\Delta x_1) = a_1 \cdot \cos \nu_a^b$$

$$(\Delta x_2) = o_1 \cdot \cos \nu_{(1)}^1 = o_1 \cdot \cos(270^\circ + \nu_a^b) = o_1 \cdot \sin \nu_a^b$$

$$\Delta x_1 = a_1 \cdot \cos \nu_a^b + o_1 \cdot \sin \nu_a^b$$

$$\Delta x_1 = q \cdot a_1 + p \cdot o_1$$

$$x_1 = x_a + \Delta x_1$$



Položaj male točke bit će definiran svojim mjerenim relativnim koordinatama. Relativne koordinate male točke na okomici su apscise a_i, i ordinate o_i.

Male točke na okomici

$$(\delta y_2) = a_2 \cdot \sin \nu_a^b$$

$$(\delta y_2') = (o_1 + o_2) \cdot \sin(\nu_a^b + 90^\circ) = (o_1 + o_2) \cdot \cos \nu_a^b$$

$$\Delta y_1 = a_1 \cdot \sin \nu_a^b + (o_1 + o_2) \cdot \cos \nu_a^b$$

$$\Delta y_2 = p \cdot a_2 + q \cdot (o_1 + o_2)$$

$$y_2 = y_1 + \Delta y_2$$

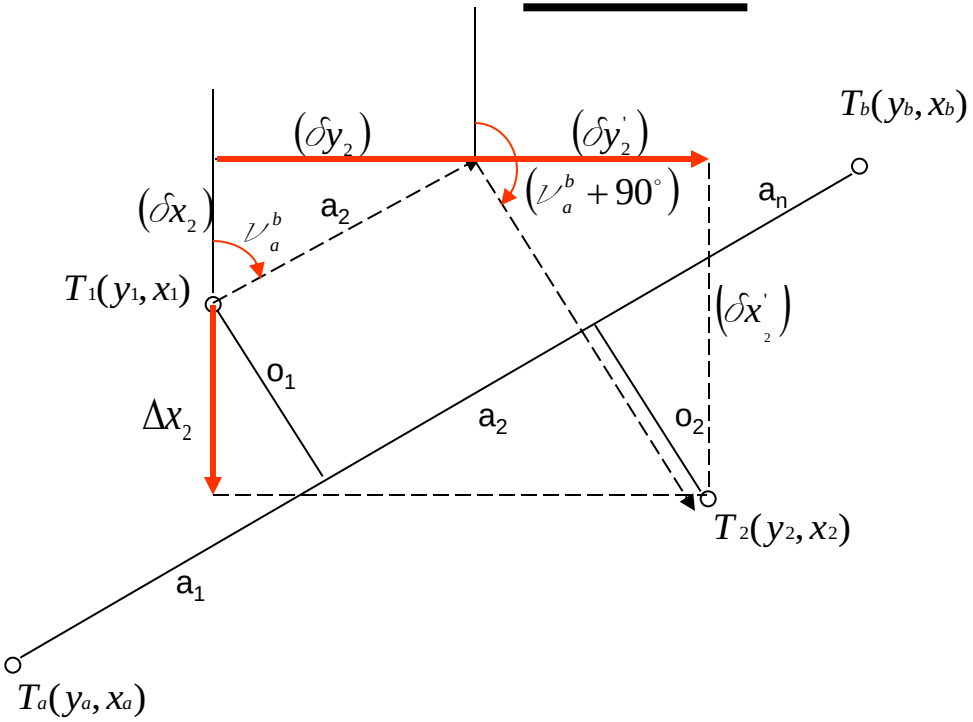
$$(\delta x_2) = a_2 \cdot \cos \nu_a^b$$

$$(\delta x_2') = (o_1 + o_2) \cdot \cos(90^\circ + \nu_a^b) = -(o_1 + o_2) \cdot \sin \nu_a^b$$

$$\Delta x_2 = a_2 \cdot \cos \nu_a^b - (o_1 + o_2) \cdot \sin \nu_a^b$$

$$\Delta x_2 = q \cdot a_2 - p \cdot (o_1 + o_2)$$

$$x_2 = x_1 + \Delta x_2$$



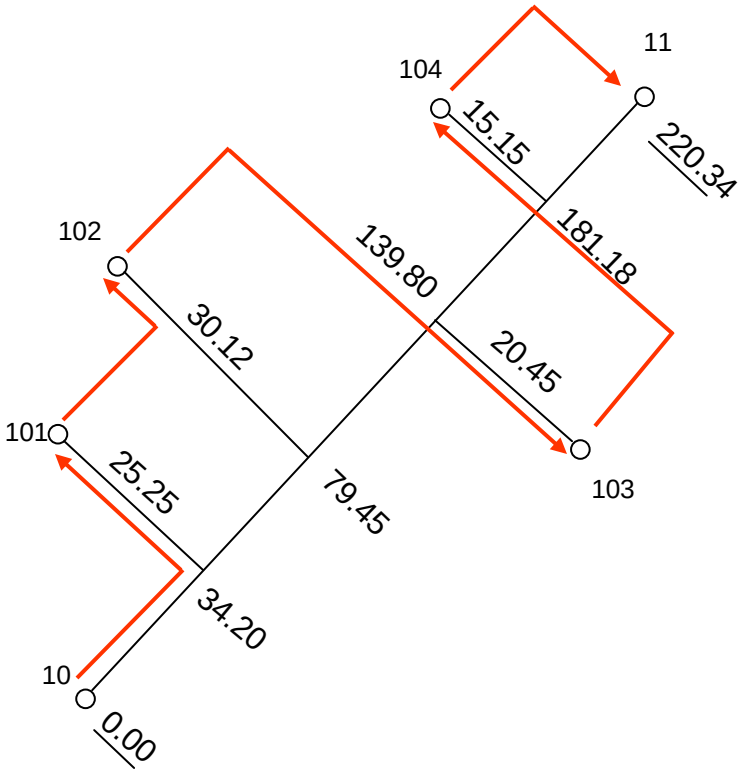
Položaj male točke bit će definiran svojim mjerenim relativnim koordinatama. Relativne koordinate male točke na okomici su apscise a_i, i ordinate o_i.

Tr.obr.br.22.

$p = \frac{(y_b - y_a)}{[a]}$ $\quad d = \sqrt{(y_b - y_a)^2 + (x_b - x_a)^2}$ $\quad \Delta y = p \cdot a + q \cdot o$ $\quad y_n = y_{n-1} + \Delta y$

$q = \frac{(x_b - x_a)}{[a]}$ $\quad f_d = d - [a]$ $\quad \Delta x = q \cdot a - p \cdot o$ $\quad x_n = x_{n-1} + \Delta x$

$p =$ 0.91636	a	$+o$	$-o$	y_n	x_n	Br. toč.
$q =$ 0.39970				45123.54	34512.48	10
	34.20		25.25	21.25	36.81	
$p^2 =$ 0.83972				45144.79	34549.29	101
	45.25		4.87	39.52	22.55	
$q^2 =$ 0.15976				45184.31	34571.84	102
	60.35	50.57		75.51	-22.22	
$1 \approx$ 0.99948				45259.82	34549.62	103
	41.38		35.60	23.69	49.16	
$(y_b - y_a)^2 =$ 40767.65				45283.51	34598.78	104
	39.16	15.15		41.94	1.77	
$(x_b - x_a)^2 =$ 7756.32				45325.45	34600.55	11
	220.34	65.72	65.72			
$d^2 =$ 48523.97				201.91	88.07	
$d =$ 220.28						
$[a] =$ 220.34						
$f_d =$ -0.06						
$\Delta. =$ ±0.10						



Male točke na okomici - *poligonski vlak*

1. Računanje smjernog kuta ν_a^b
2. Računanje smjernog kuta $\nu_1 = \nu_a^b + \beta \pm 180^\circ$
3. Računanje koord.razlika nožišta točke T_1

$$\Delta y_1' = a_1 \cdot \sin \nu_a^b \qquad \Delta x_1' = a_1 \cdot \cos \nu_a^b$$

4. Računanje koord. nožišta

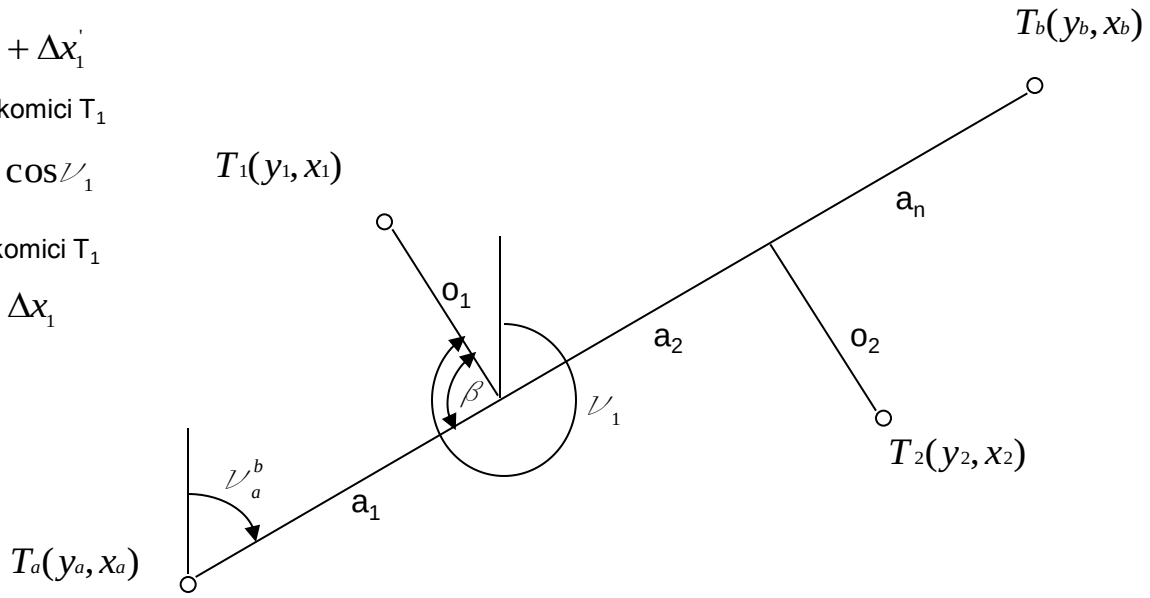
$$y_1' = y_a + \Delta y_1' \qquad x_1' = y_a + \Delta x_1'$$

5. Računanje koord.razlika točke na okomici T_1

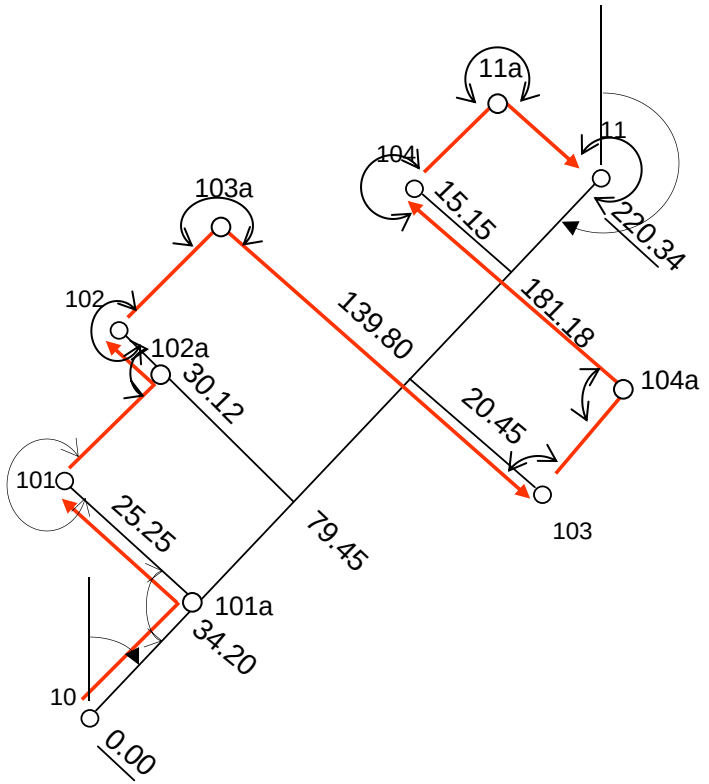
$$\Delta y_1 = o_1 \cdot \sin \nu_1 \qquad \Delta x_1 = o_1 \cdot \cos \nu_1$$

6. Računanje koord. male točke na okomici T_1

$$y_1 = y_1' + \Delta y_1 \qquad x_1 = x_1' + \Delta x_1$$



BR. POLIG.	PRELOMNI I VEZNI KUTOVI .	SMJERNI KUTOVI	DUŽINE	$\Delta y=d\sin v$	$\Delta x=d\cos v$	$y_n=y_{n-1}+\Delta y$	$x_n=x_{n-1}+\Delta x$	.BR. POLIG.
10						45123.54	34512.48	10
		66 26 03	34.20	31.35	13.67	31.35	13.67	
101a	90 00 00					45154.89	34526.15	101a
		336 26 03	25.25	-10.10	23.14	-10.10	23.14	
101	270 00 00					45144.79	34549.29	101
		66 26 03	45.25	-1 41.48	18.09	41.47	18.09	
102a	90 00 00					45186.25	34567.38	102a
		336 26 03	4.87	-1.95	4.46	-1.95	4.46	
102	270 00 00					45184.31	34571.84	102
		66 26 03	60.35	-1 55.32	-1 24.13	55.31	24.12	
103a	270 00 00					45239.62	34595.96	103a
		156 26 03	50.57	-1 20.22	-46.35	20.21	-46.35	
103	90 00 00					45259.83	34549.61	103
		66 26 03	41.38	-1 37.92	16.54	37.91	16.54	
104a	90 00 00					45297.74	34566.15	104a
		336 26 03	35.60	-14.23	32.63	-14.23	32.63	
104	270 00 00					45283.51	34598.78	104
		66 26 03	39.16	-1 35.89	15.66	35.88	15.66	
11a	270 00 00					45319.39	34614.44	11a
		156 26 03	15.15	6.06	-13.89	6.06	-13.89	
11	270 00 00			201.96	88.08	45325.45	34600.55	11
		246 26 03		f_y=-0.05	f_x=-0.01	201.91	88.07	



-
1