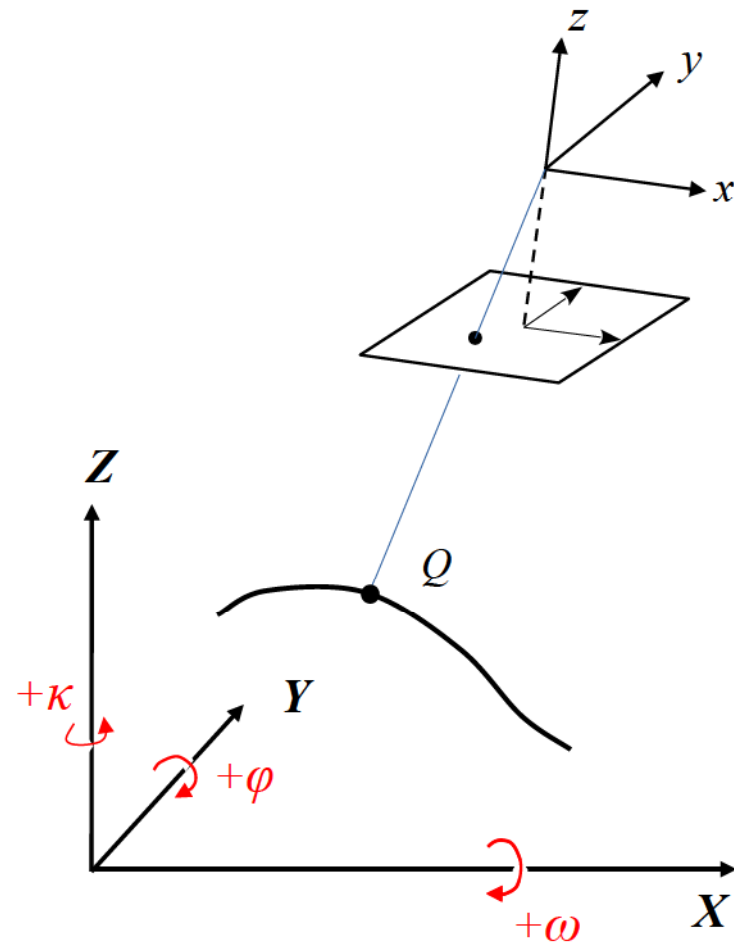
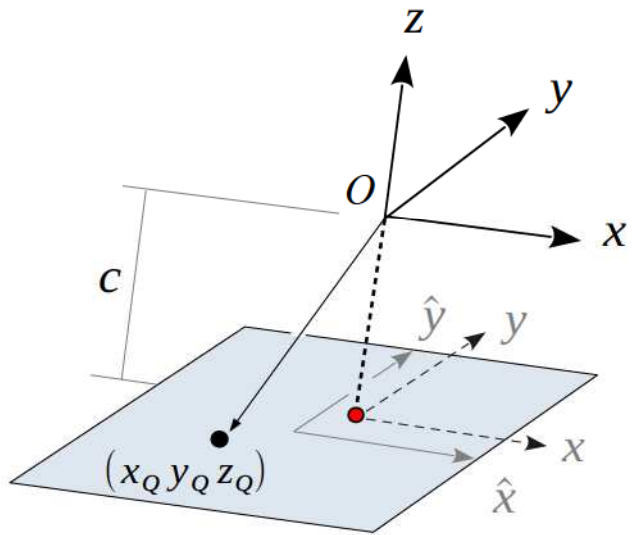


Rysunki i wzory do objaśnienia



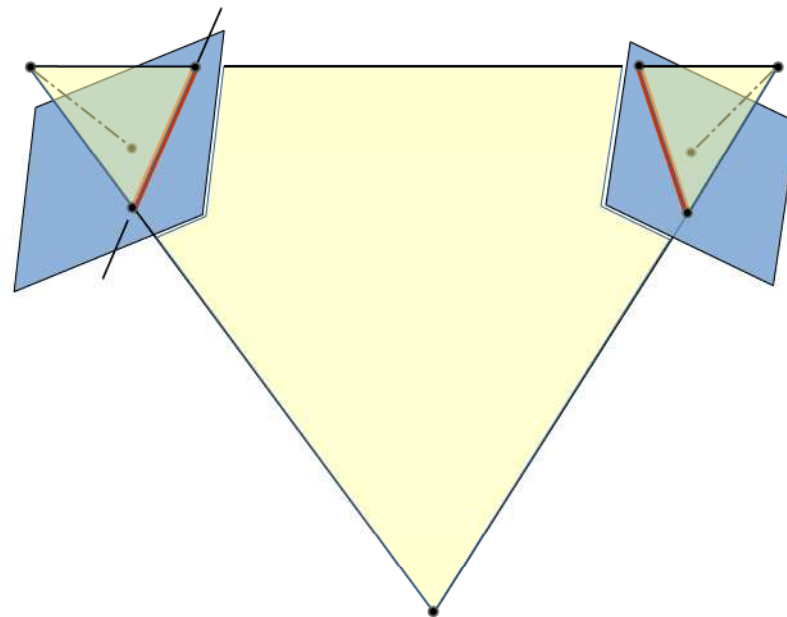
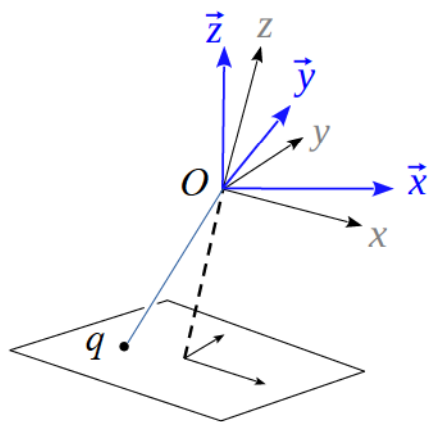
$$\begin{bmatrix} \vec{x} \\ \vec{y} \\ \vec{z} \end{bmatrix} = \mathbf{R} \begin{bmatrix} x \\ y \\ -c \end{bmatrix}$$

$$\begin{bmatrix} x \\ y \\ -c \end{bmatrix} = \frac{1}{\mu} \cdot \mathbf{R}_{\omega\varphi\kappa}^T \begin{bmatrix} X - X_0 \\ Y - Y_0 \\ Z - Z_0 \end{bmatrix}$$

$$\begin{bmatrix} X \\ Y \\ Z \end{bmatrix} = \begin{bmatrix} X_0 \\ Y_0 \\ Z_0 \end{bmatrix} + \mu \cdot \mathbf{R} \begin{bmatrix} x \\ y \\ -c \end{bmatrix}$$

$$x = -c \cdot \frac{r_{11}(X - X_0) + r_{21}(Y - Y_0) + r_{31}(Z - Z_0)}{r_{13}(X - X_0) + r_{23}(Y - Y_0) + r_{33}(Z - Z_0)}$$

$$y = -c \cdot \frac{r_{12}(X - X_0) + r_{22}(Y - Y_0) + r_{32}(Z - Z_0)}{r_{13}(X - X_0) + r_{23}(Y - Y_0) + r_{33}(Z - Z_0)}$$



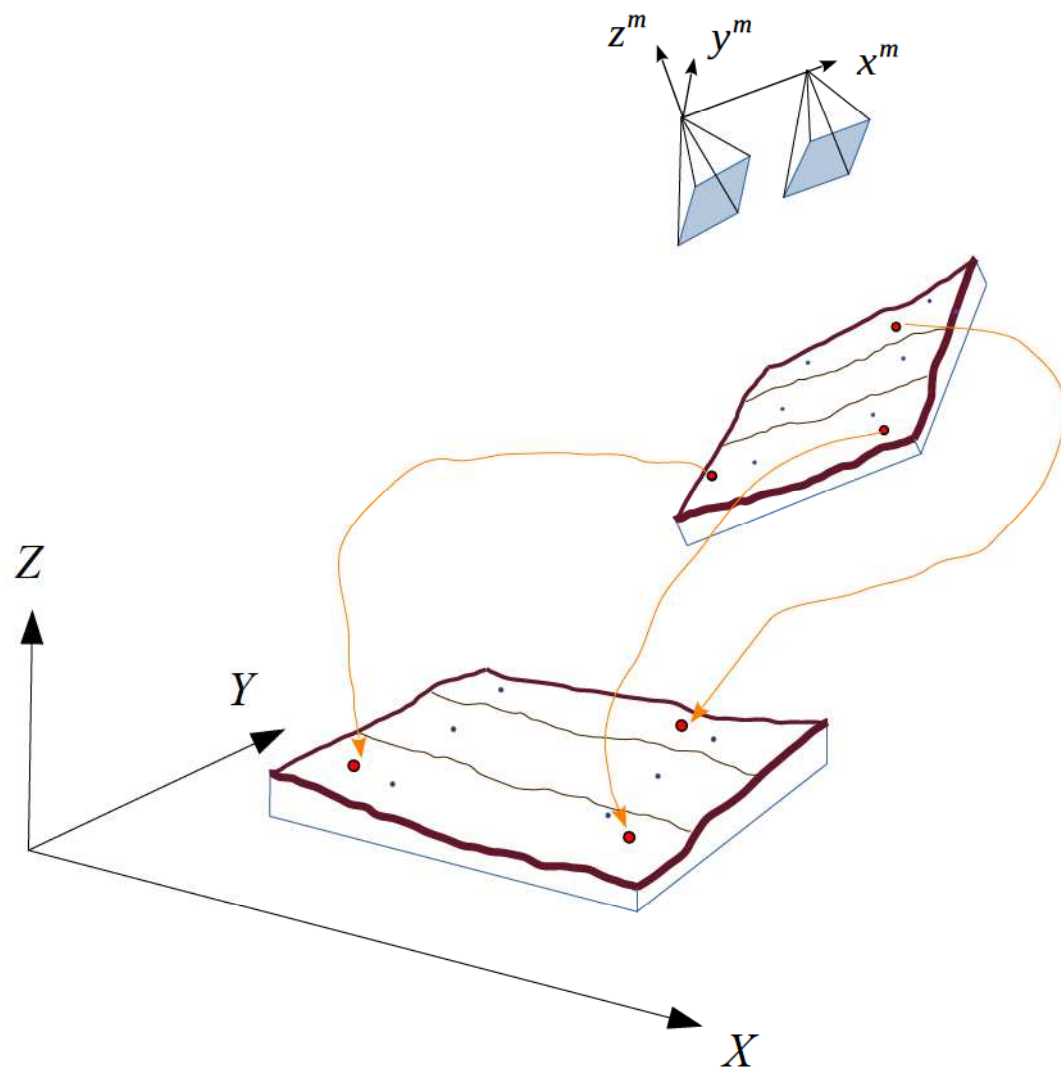
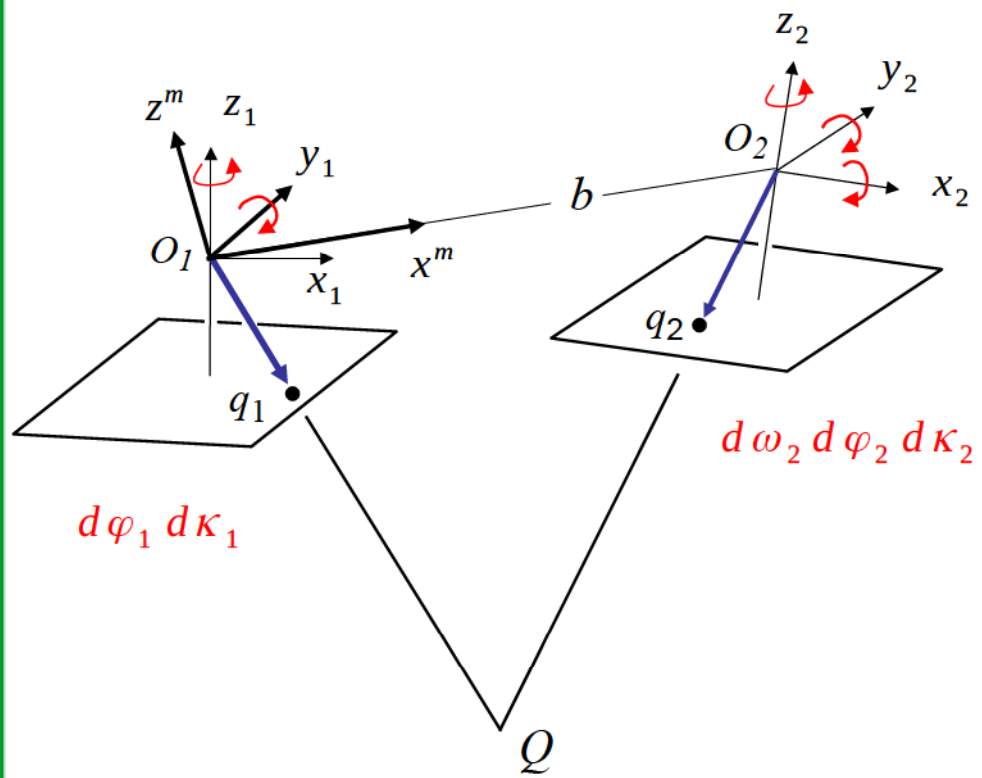
$$[x_1, y_1, 1] \begin{bmatrix} f_{11} & f_{12} & f_{13} \\ f_{21} & f_{22} & f_{23} \\ f_{31} & f_{32} & 1 \end{bmatrix} \begin{bmatrix} x_2 \\ y_2 \\ 1 \end{bmatrix} = 0$$

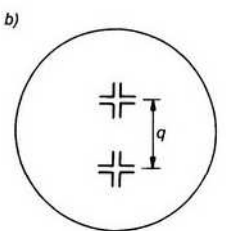
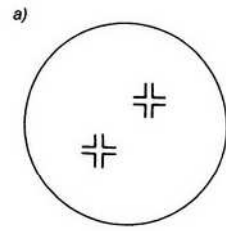
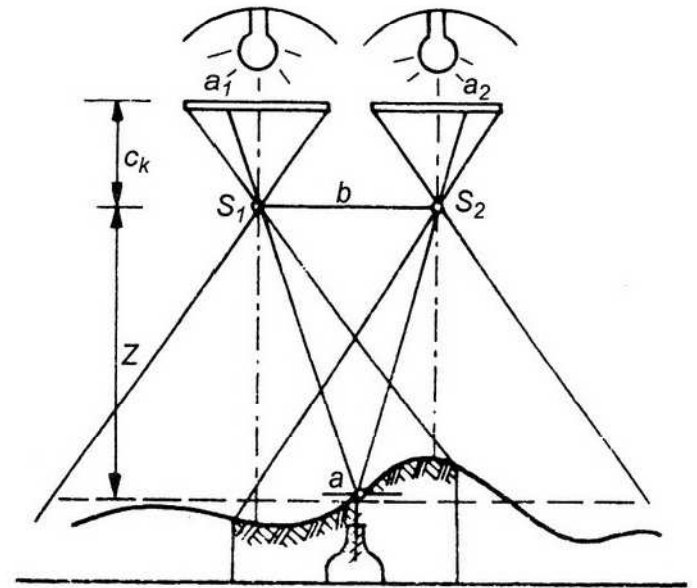
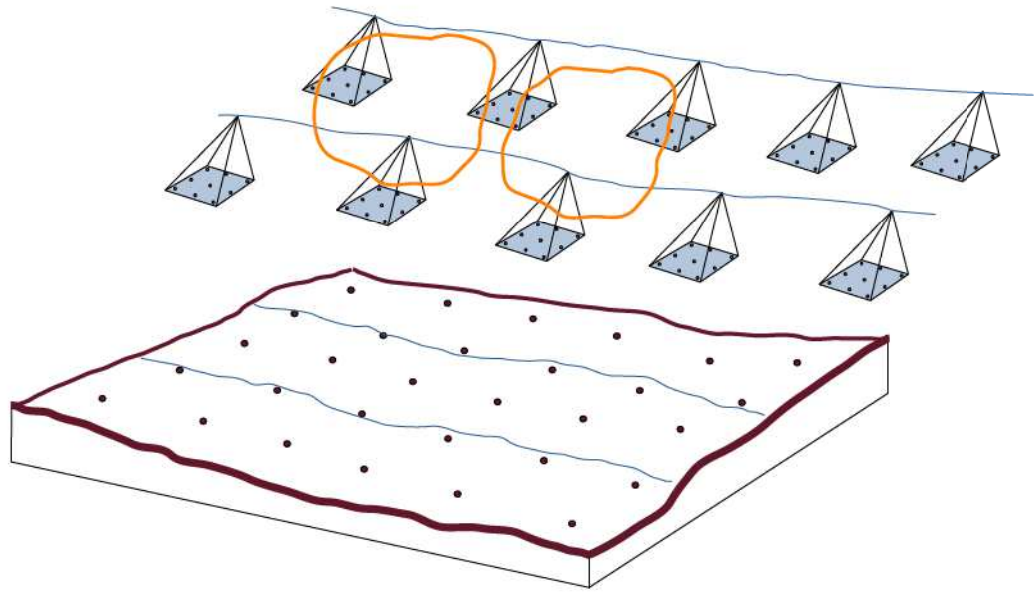
$$x_1 y_2 f_{11} + x_1 y_2 f_{12} + x_1 f_{13} + x_2 y_1 f_{21} + y_1 y_2 f_{22} + y_1 f_{23} + x_2 f_{31} + y_2 f_{32} + 1 = 0$$

$$\begin{vmatrix} b_x^m & b_y^m & b_z^m \\ x_1^m & y_1^m & z_1^m \\ x_2^m & y_2^m & z_2^m \end{vmatrix} = 0$$

$$\begin{vmatrix} b & 0 & 0 \\ x_1^m & y_1^m & z_1^m \\ x_2^m & y_2^m & z_2^m \end{vmatrix} = 0$$

$$\begin{bmatrix} X \\ Y \\ Z \end{bmatrix} = \begin{bmatrix} \Delta X_O \\ \Delta Y_O \\ \Delta Z_O \end{bmatrix} + m \mathbf{R}_m \begin{bmatrix} x^m \\ y^m \\ z^m \end{bmatrix}$$





$$v_x = \frac{\partial x}{\partial X_0} dX_0 + \dots + \frac{\partial x}{\partial \omega} d\omega + \dots + \frac{\partial x}{\partial X} dX + \dots - (x - f_x^0)$$

$$v_y = \frac{\partial y}{\partial X_0} dX_0 + \dots + \frac{\partial y}{\partial \omega} d\omega + \dots + \frac{\partial y}{\partial X} dX + \dots - (y - f_y^0)$$

$$X_0^0, Y_0^0, Z_0^0, \omega^0, \varphi^0, \kappa^0, X^0, Y^0, Z^0$$

$$dX_0, dY_0, dZ_0, d\omega, d\varphi, d\kappa, dX, dY, dZ$$

$$\mathbf{R} = \mathbf{Q}_{vv} \mathbf{P}$$

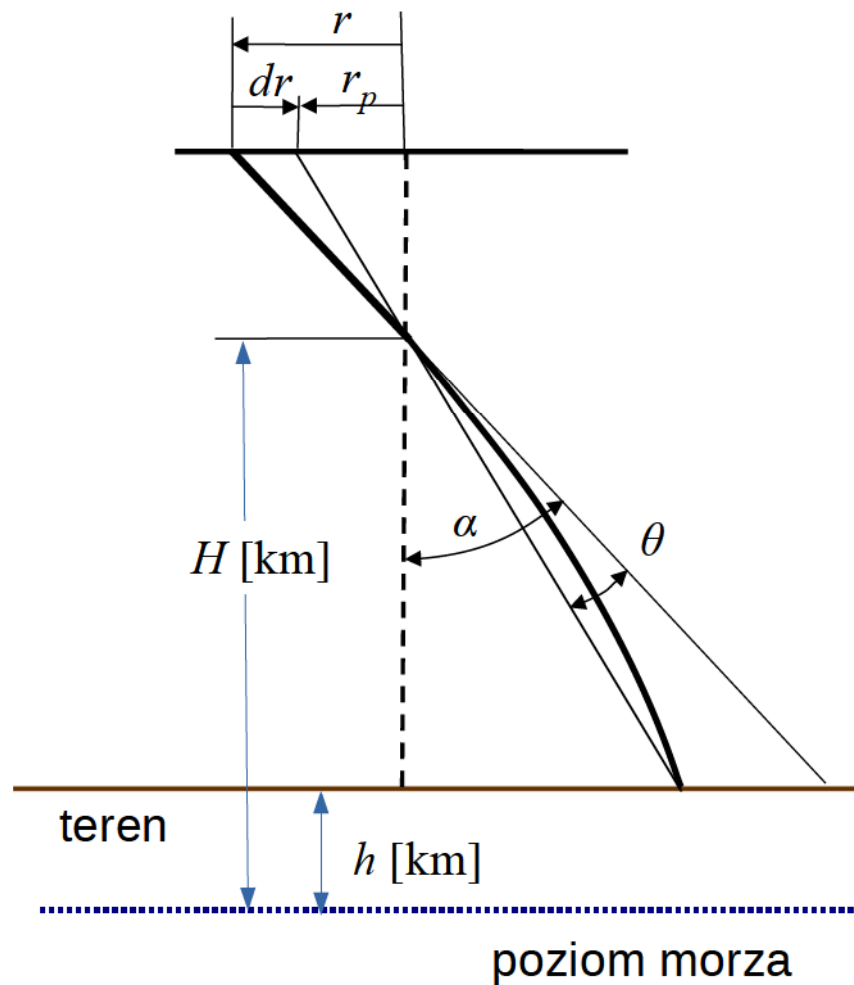
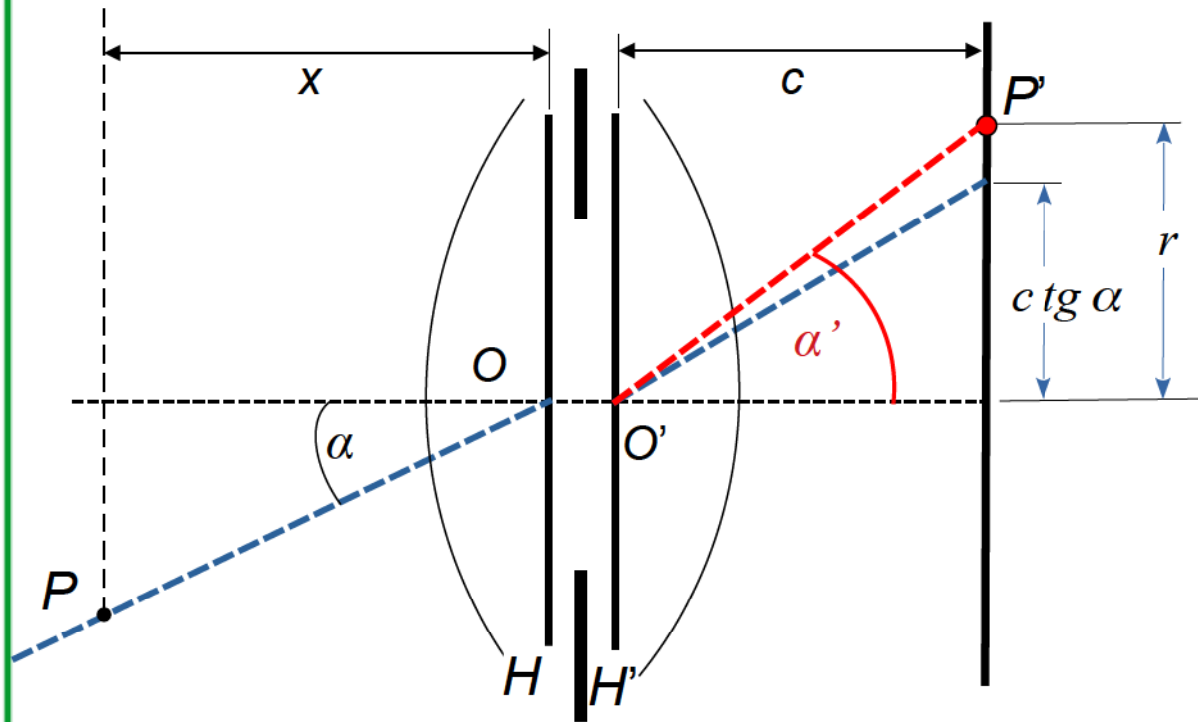
$$\sigma_i = \frac{\sigma_0}{\sqrt{p_i}}$$

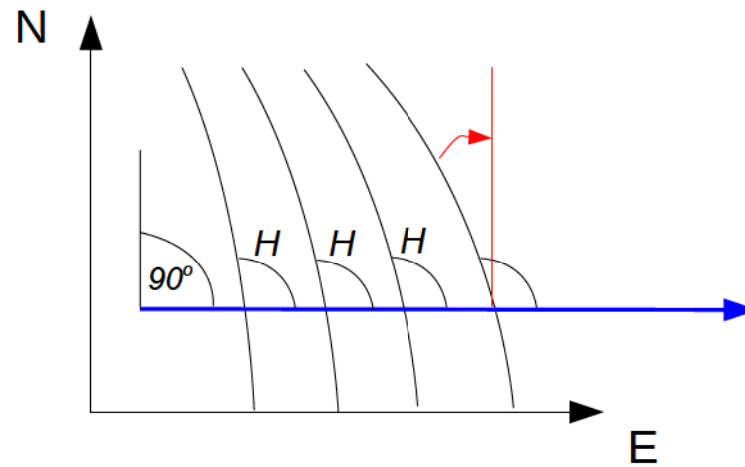
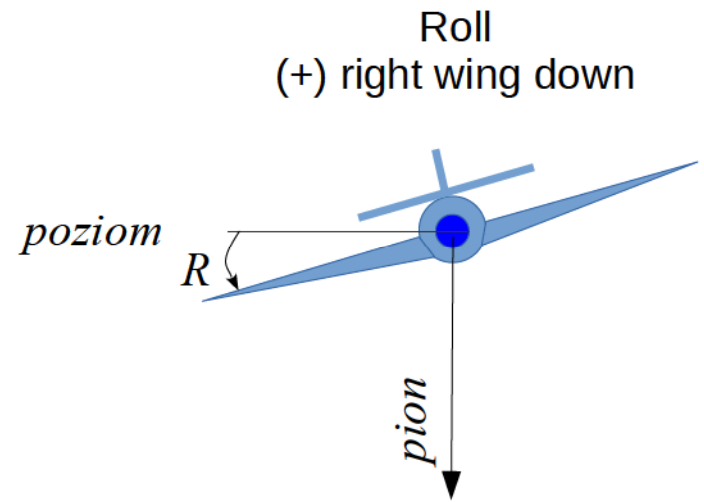
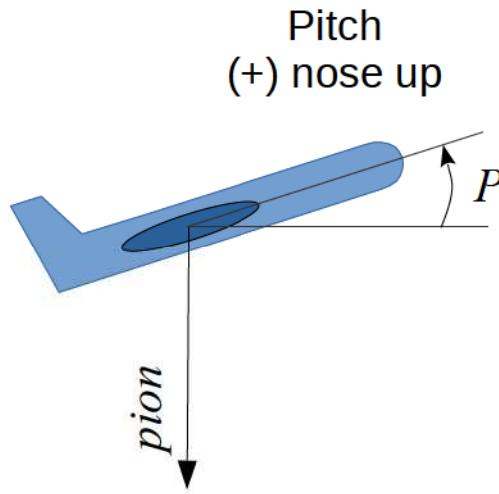
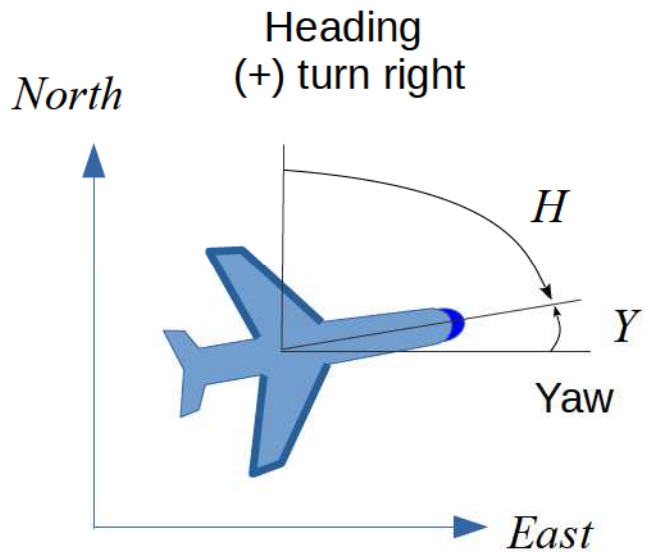
$$\sigma_{vi} = \sqrt{r_i} \sigma_i$$

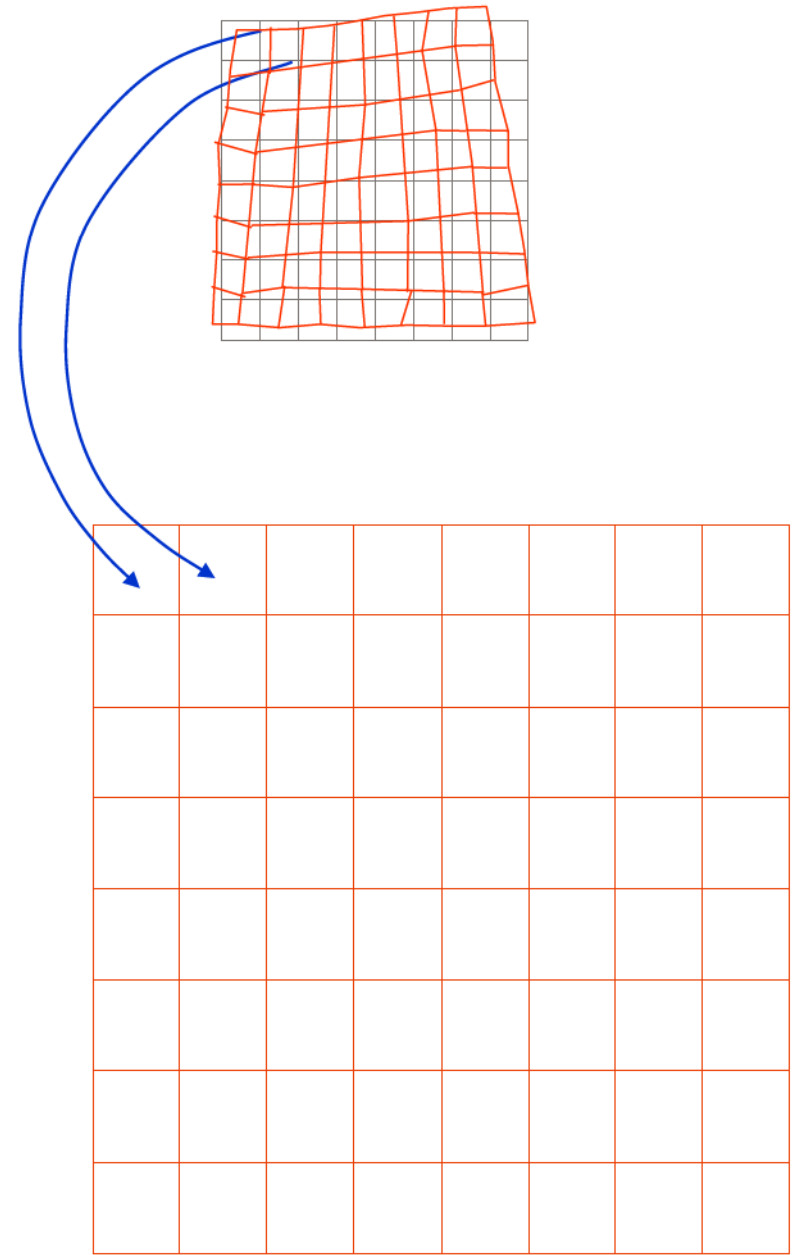
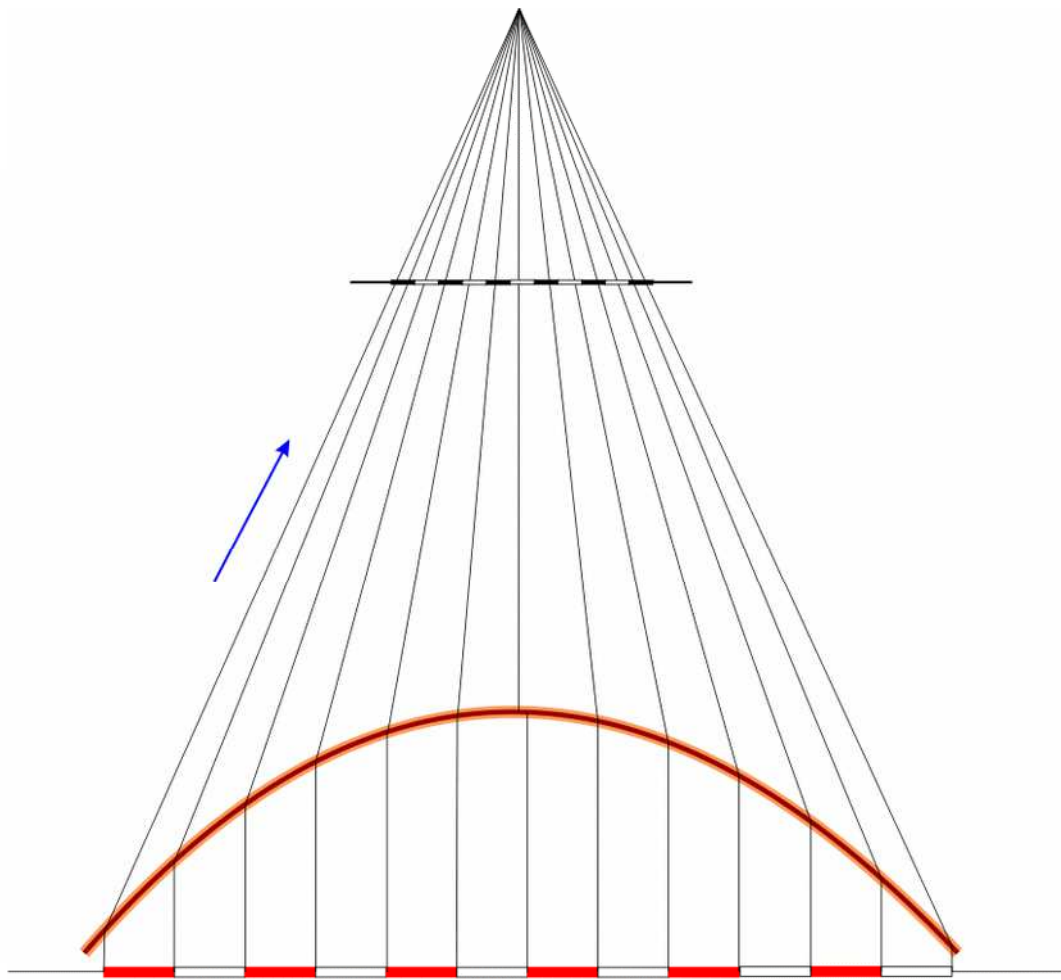
$$\bar{v}_i = \frac{v_i}{\sigma_{vi}}$$

$$\Delta x_d = \Delta x_r + \Delta x_t = x(k_1 r^2 + k_2 r^4 + k_3 r^6) + \dots + p_1(r^2 + 2x^2) + 2p_2 xy$$

$$\Delta y_d = \Delta y_r + \Delta y_t = y(k_1 r^2 + k_2 r^4 + k_3 r^6) + \dots + p_2(r^2 + 2y^2) + 2p_1 xy$$





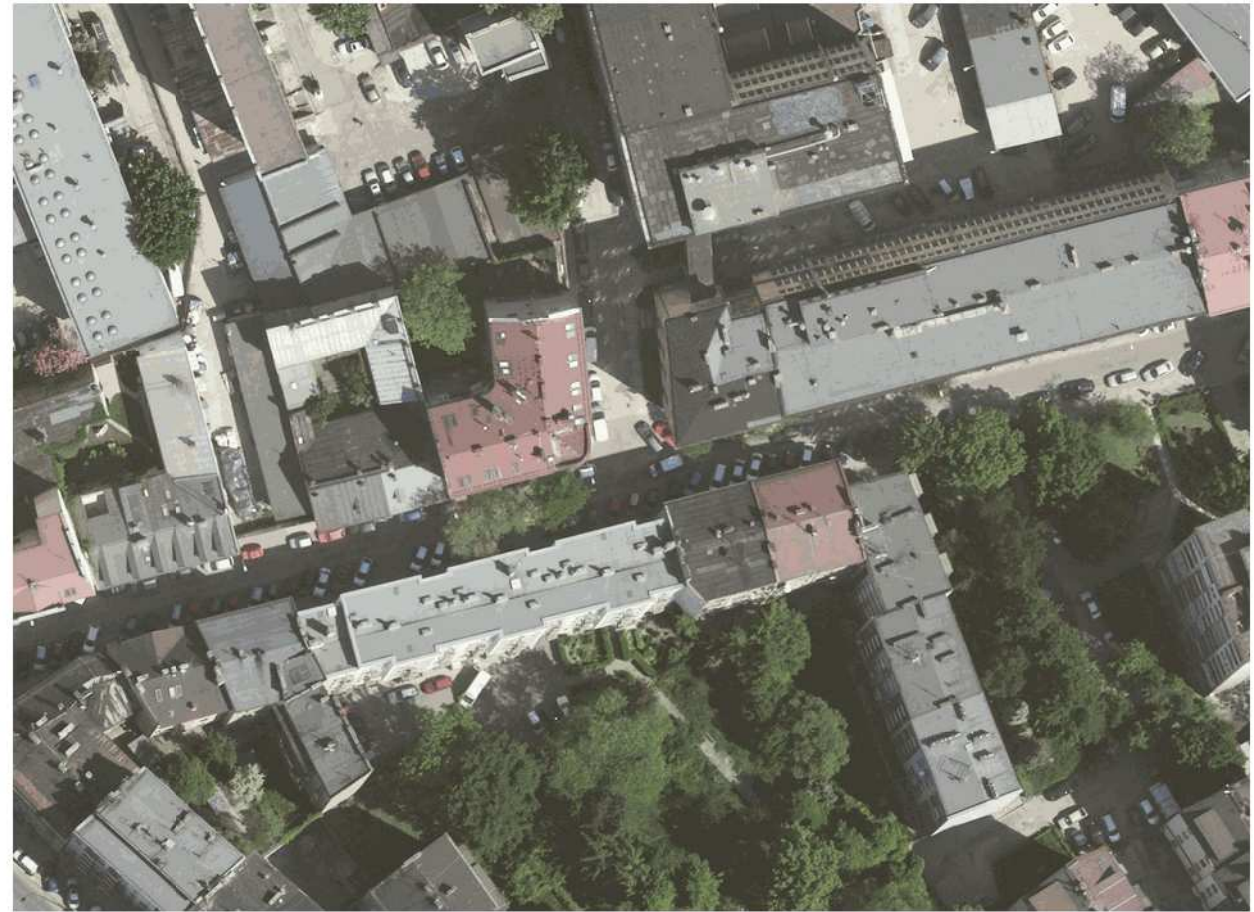


Крыка CFL

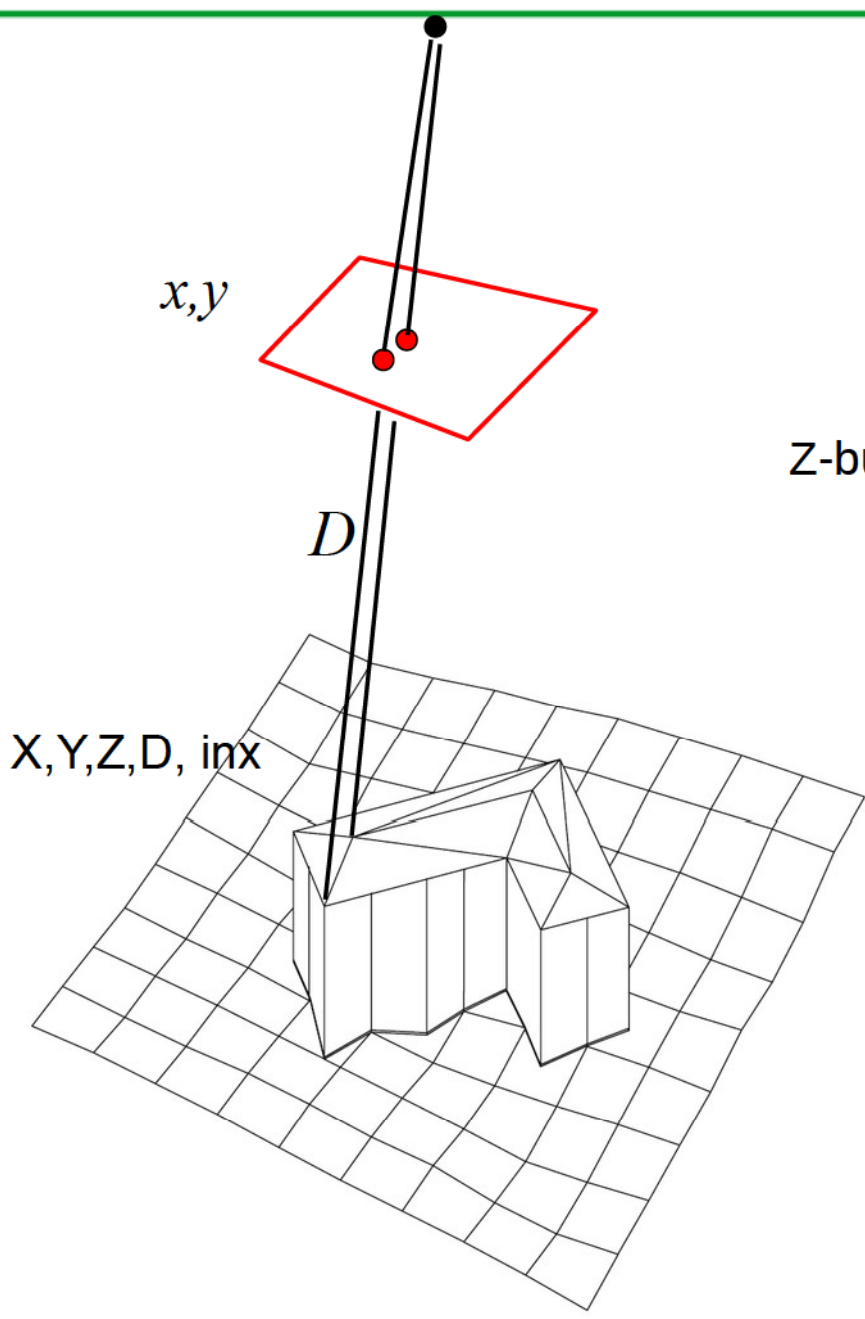
CFL - egzamin



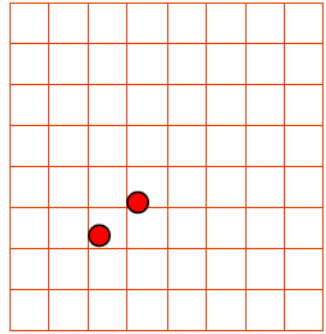
Kpyka CFL



CFL - egzamin



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