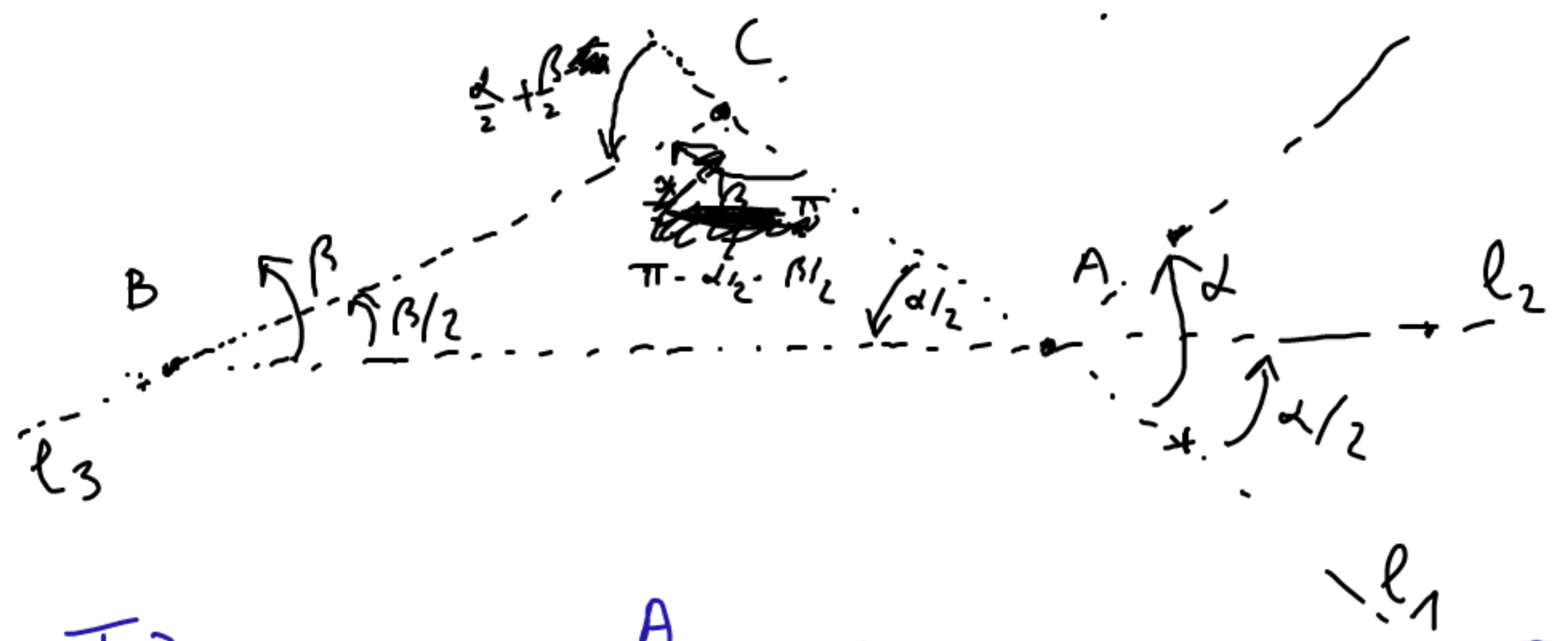
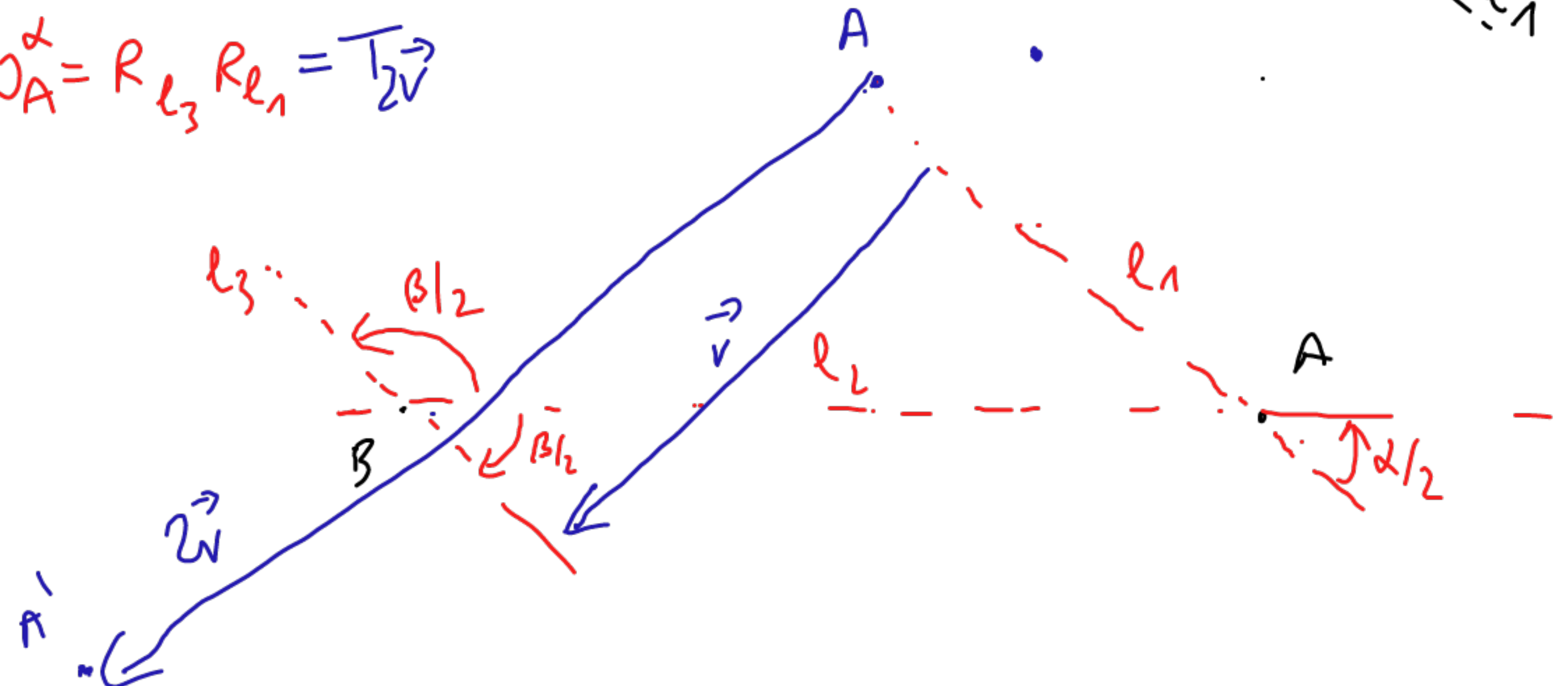


$V/2$ dwa obroty o wierzchołkach $O_B^{\beta} O_A^{\alpha} = R_{l_3} R_{l_2} R_{l_2} R_{l_1} = R_{l_3} R_{l_1} = O_C^{\frac{\alpha}{2} + \beta}$
 $(R_{l_2} R_{l_1} = O_A^{\alpha})$
 $R_{l_3} R_{l_2}$

zob. też
 wstatki
 D. Huzicka



$O_B^{\beta} O_A^{\alpha} = R_{l_3} R_{l_1} = T_{2V}$



$\frac{\alpha}{2} + \frac{\beta}{2} = \pi$
 $\checkmark \frac{\alpha}{2} + \frac{\beta}{2} = 0$

$v/4$

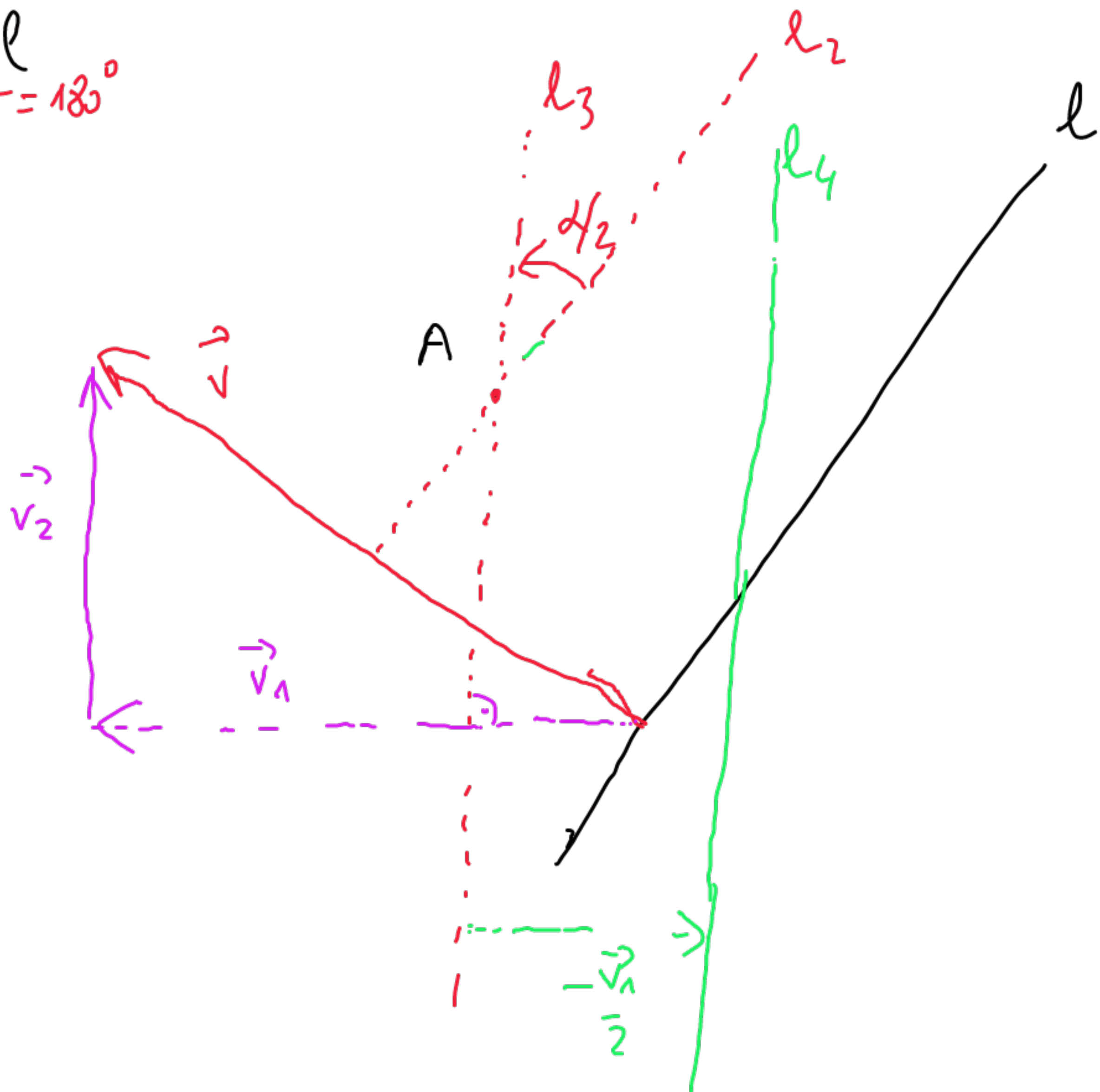
$A \notin \ell$

$\alpha \neq \pi = 180^\circ$

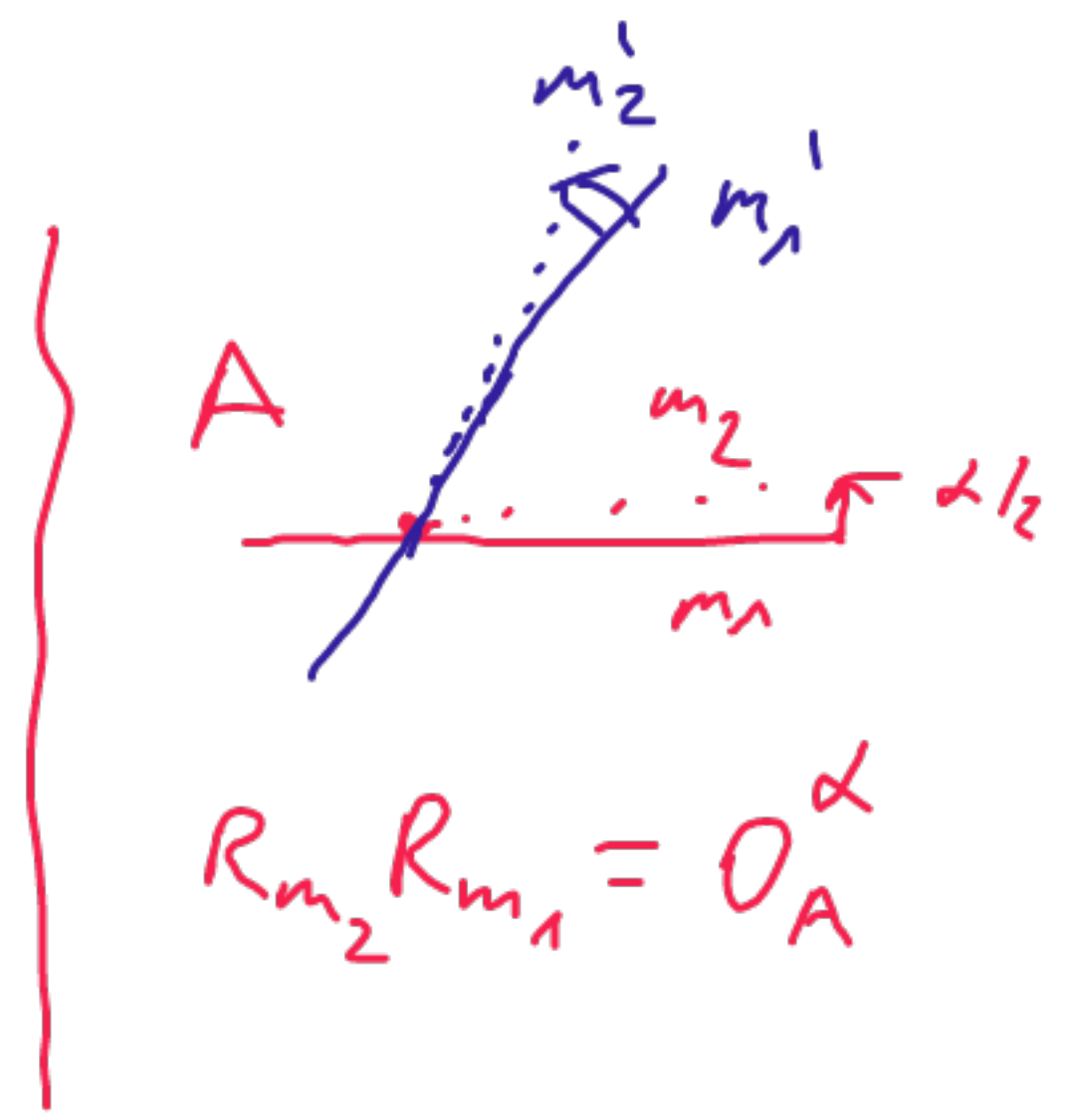
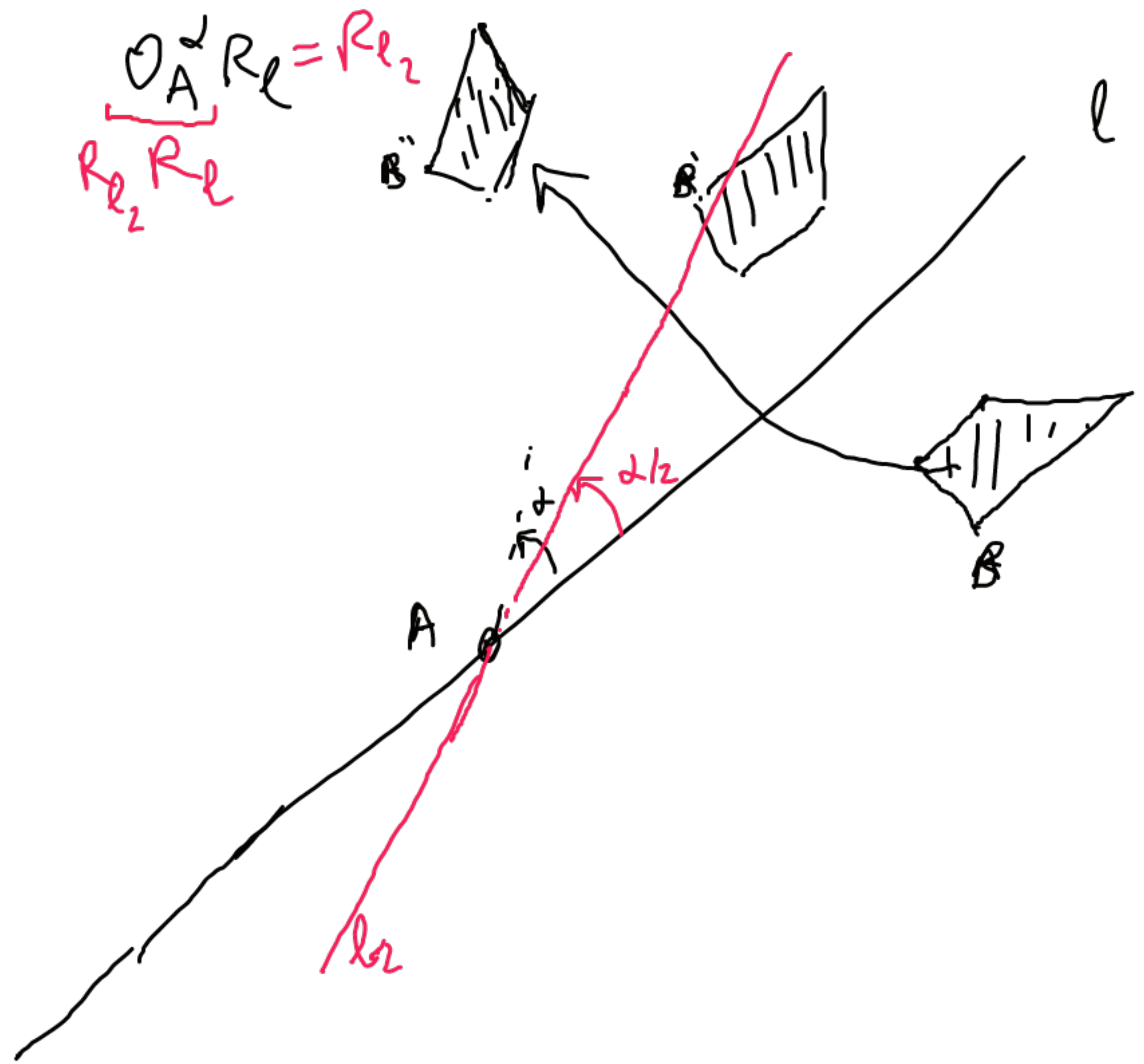
$$O_A^\alpha R_\ell = R_{\ell_3} R_{\ell_2} R_\ell = R_{\ell_3} T_{\vec{v}} =$$

$$R_{\ell_3} T_{\vec{v}_1} T_{\vec{v}_2} = R_{\ell_3} R_{\ell_3} R_{\ell_4} T_{\vec{v}_2} =$$

$$= R_{\ell_4} T_{\vec{v}_2} = G_{\vec{v}_2}^{\ell_4}$$



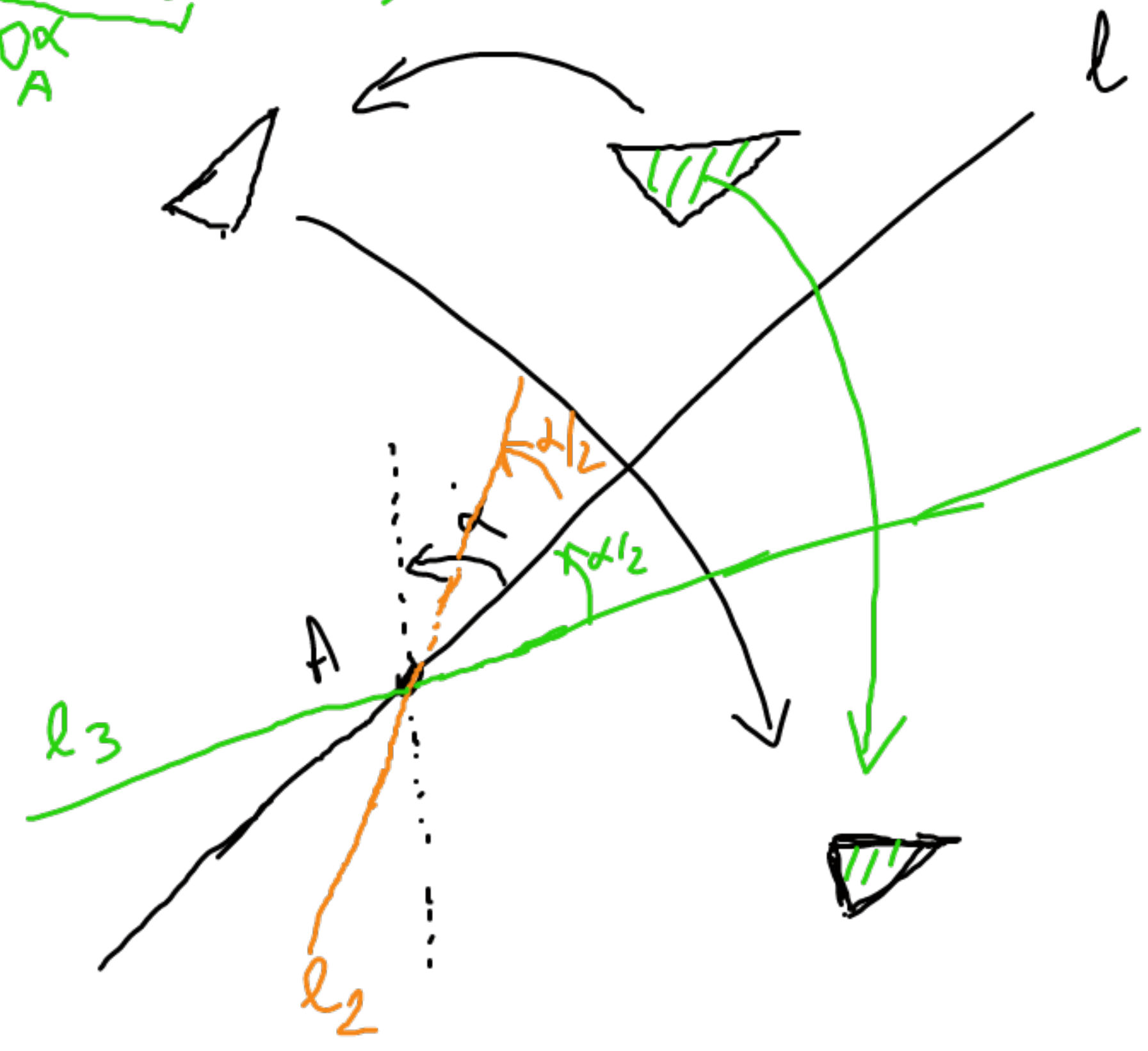
V/h Prędkość AEL



$\sqrt{3}$ inne kolejno : $R_l O_A^\alpha = \underbrace{R_l R_l R_l}_{O_A^\alpha} = R_l$

przypadek $A \in l$

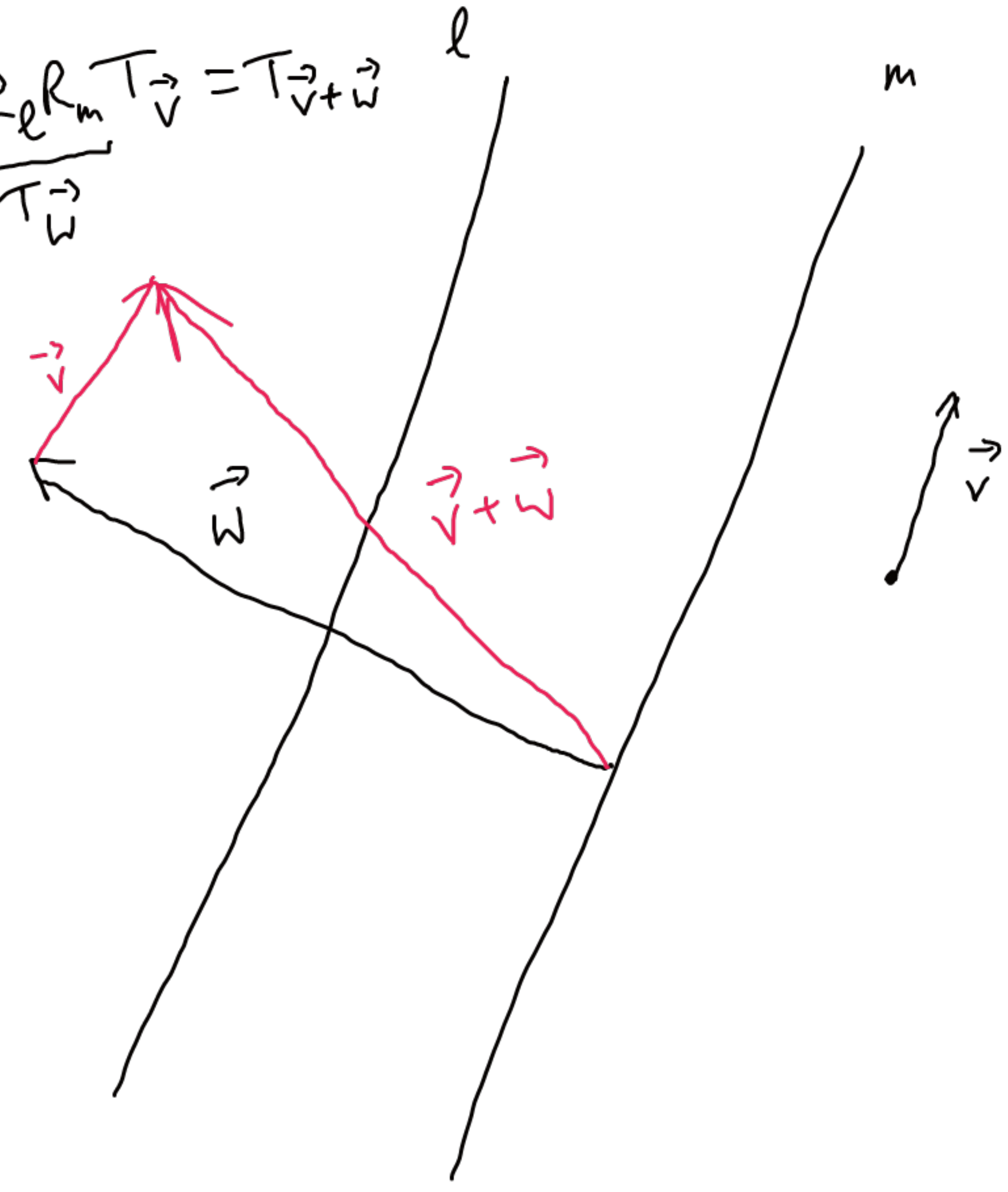
$R_l R_l R_l$
 nie kasują się!
 nie kasują się!



v/b

$$R_l G_{\vec{v}}^m = \underbrace{R_l R_m}_{T_{\vec{v}}^{\vec{w}}} T_{\vec{v}} = T_{\vec{v}+\vec{w}}$$

$l \parallel m$

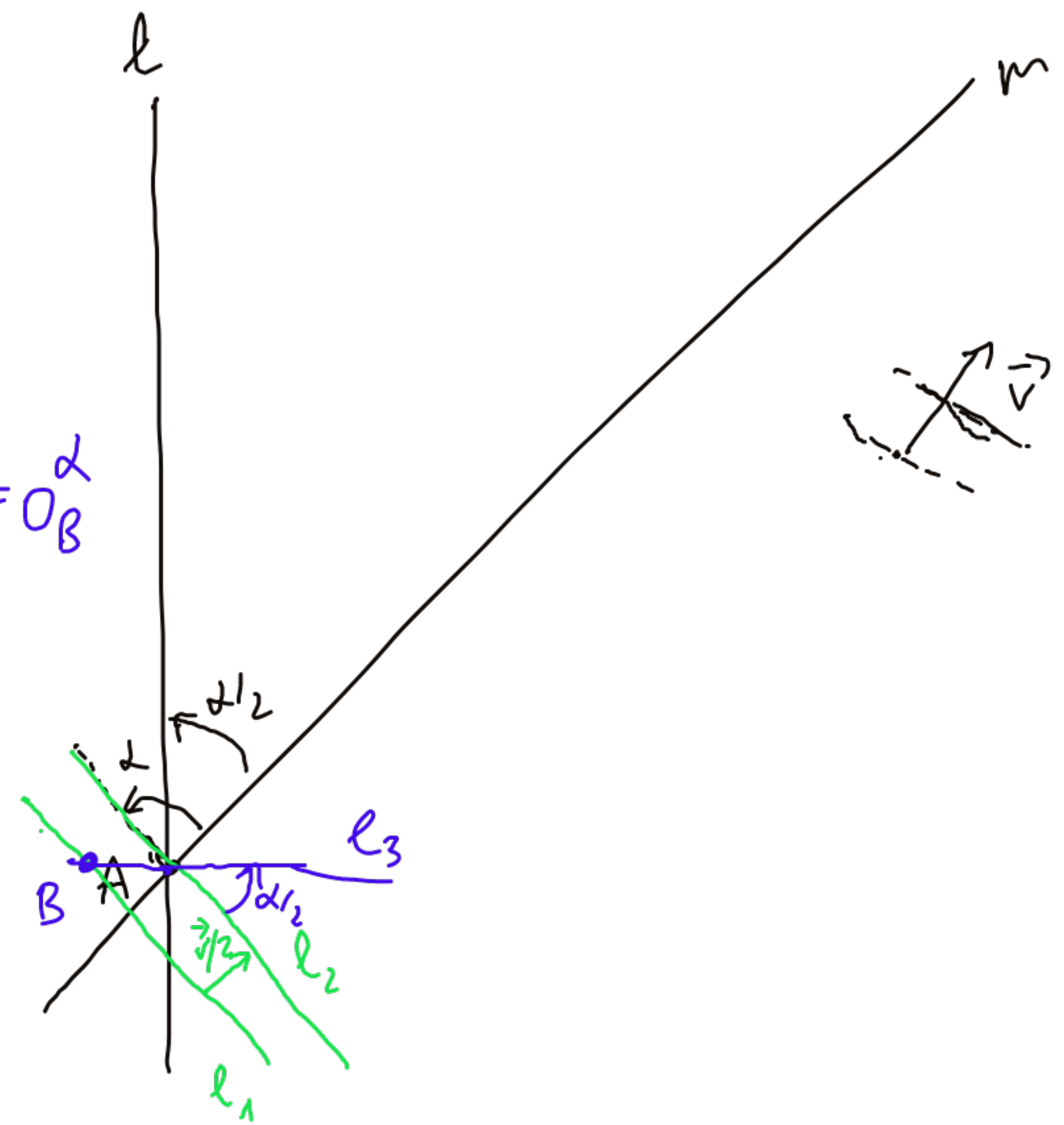


$\frac{V}{G}$

$$R_l \vec{G}^m = \underbrace{R_l R_m}_{R_{l_3} R_{l_2} O_A} \underbrace{T_{\vec{V}}}_{R_{l_2} R_{l_1}} =$$

propagatale $l \cap m = \{A\}$

$$= \underbrace{R_{l_3} R_{l_2}}_{O_B} \underbrace{R_{l_2} R_{l_1}}_{O_B} = R_{l_3} R_{l_1} = O_B^\alpha$$



v/l

$\vec{v} \parallel \vec{w}$

$$T_{\vec{w}} G_{\vec{v}}^l =$$

$$= T_{\vec{w}} T_{\vec{v}} R_l =$$

$$= T_{\vec{v} + \vec{w}} R_l = G_{\vec{v} + \vec{w}}^l$$

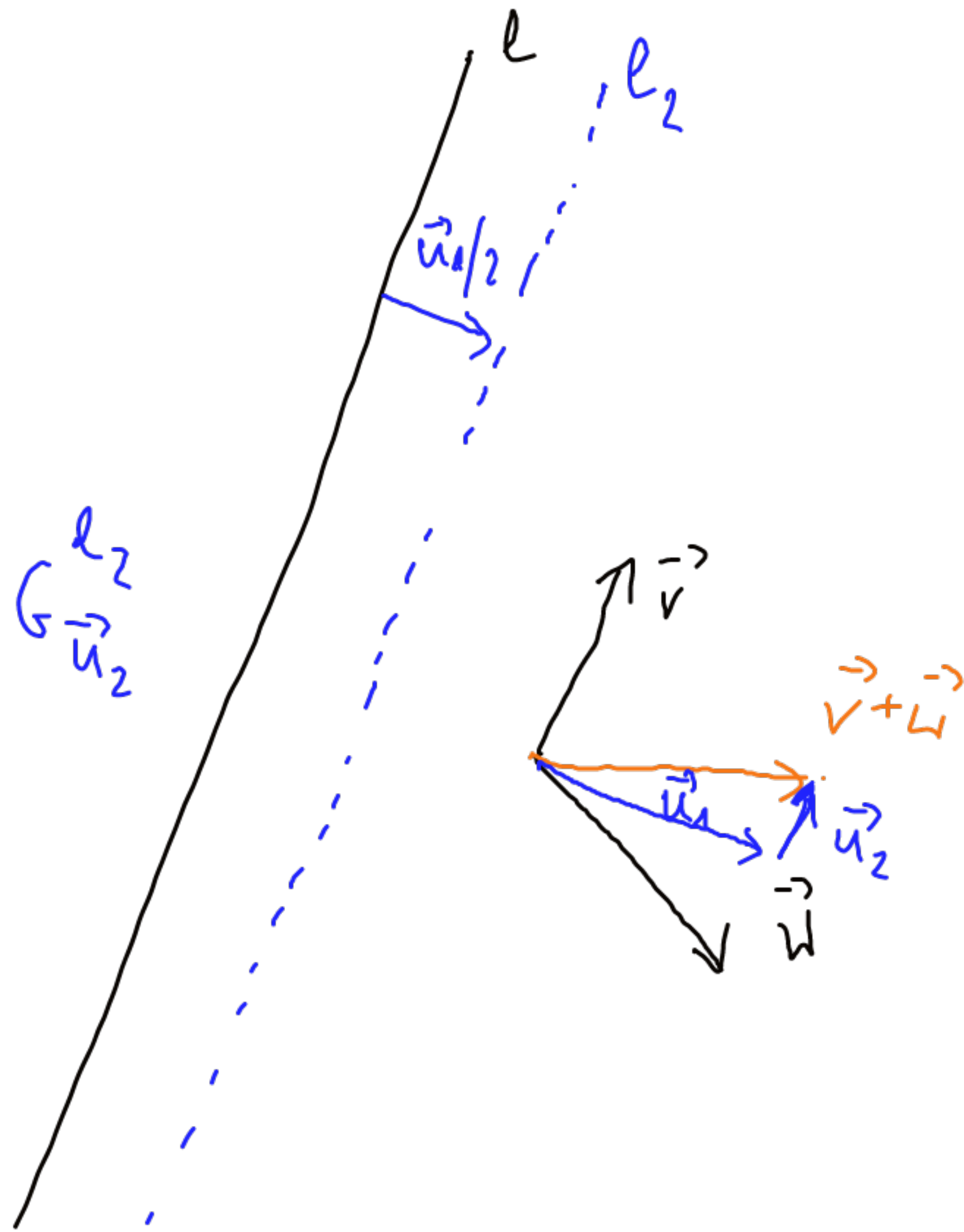


$\frac{v}{8}$
 $\vec{v} \times \vec{w}$

$$T_{\vec{w}} G_{\vec{v}}^l = T_{\vec{w}} T_{\vec{v}} R_l =$$

$$= T_{\vec{v} + \vec{w}} R_l = T_{\vec{u}_2} T_{\vec{u}_1} R_l =$$

$$= T_{\vec{u}_2} \underbrace{R_{l_2} R_l R_l}_{T_{\vec{u}_1}} R_l = T_{\vec{u}_2} R_{l_2} = G_{\vec{u}_2}^{l_2}$$



$$\left\{ \begin{array}{l} \vec{u}_1 + \vec{u}_2 = \vec{v} + \vec{w} \\ \vec{u}_1 \parallel l \\ \vec{u}_2 \perp l \end{array} \right.$$

\vec{v}/g

$$G_{\vec{w}}^m G_{\vec{v}}^l =$$

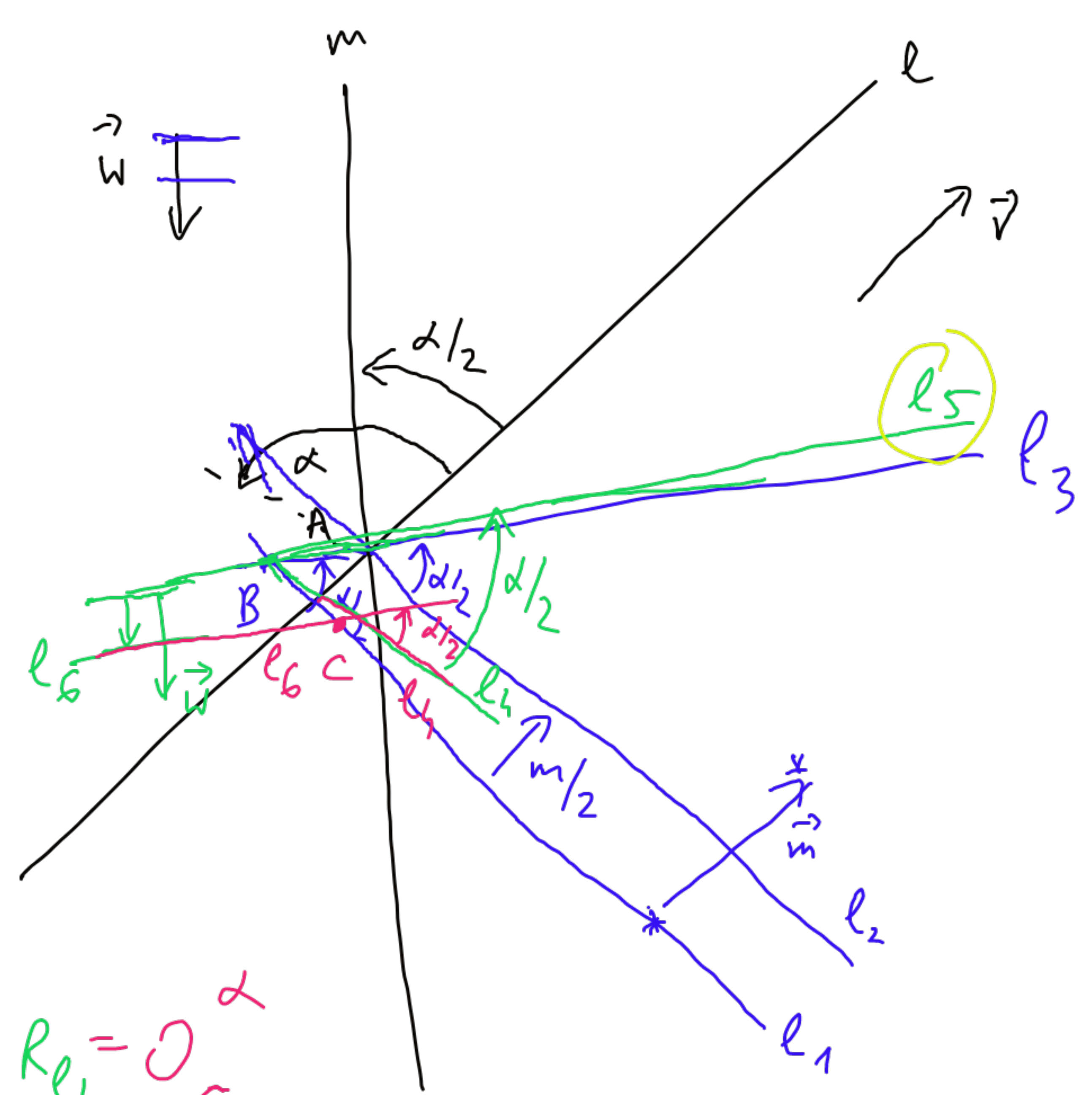
$$l \cap m = \{A\}$$

$$= T_{\vec{w}} \underbrace{R_m R_l}_{O_A} T_{\vec{v}}$$

$$= T_{\vec{w}} \underbrace{R_{l_3} R_{l_2} R_{l_2} R_{l_1}}_{O_B} =$$

$$= T_{\vec{w}} \underbrace{R_{l_3} R_{l_1}}_{O_B} = T_{\vec{w}} O_B^\alpha =$$

$$= \underbrace{R_{l_6} R_{l_5} R_{l_5} R_{l_4}}_{O_C} = R_{l_6} R_{l_4} = O_C^\alpha$$



$\frac{v_1/1}{1) H_A T_{\vec{u}} H_A = H_A R_{l_2} R_{l_1} \underbrace{H_A}_{R_{l_1} R_{l_3}} = H_A R_{l_2} R_{l_3} = H_B}$ con.

