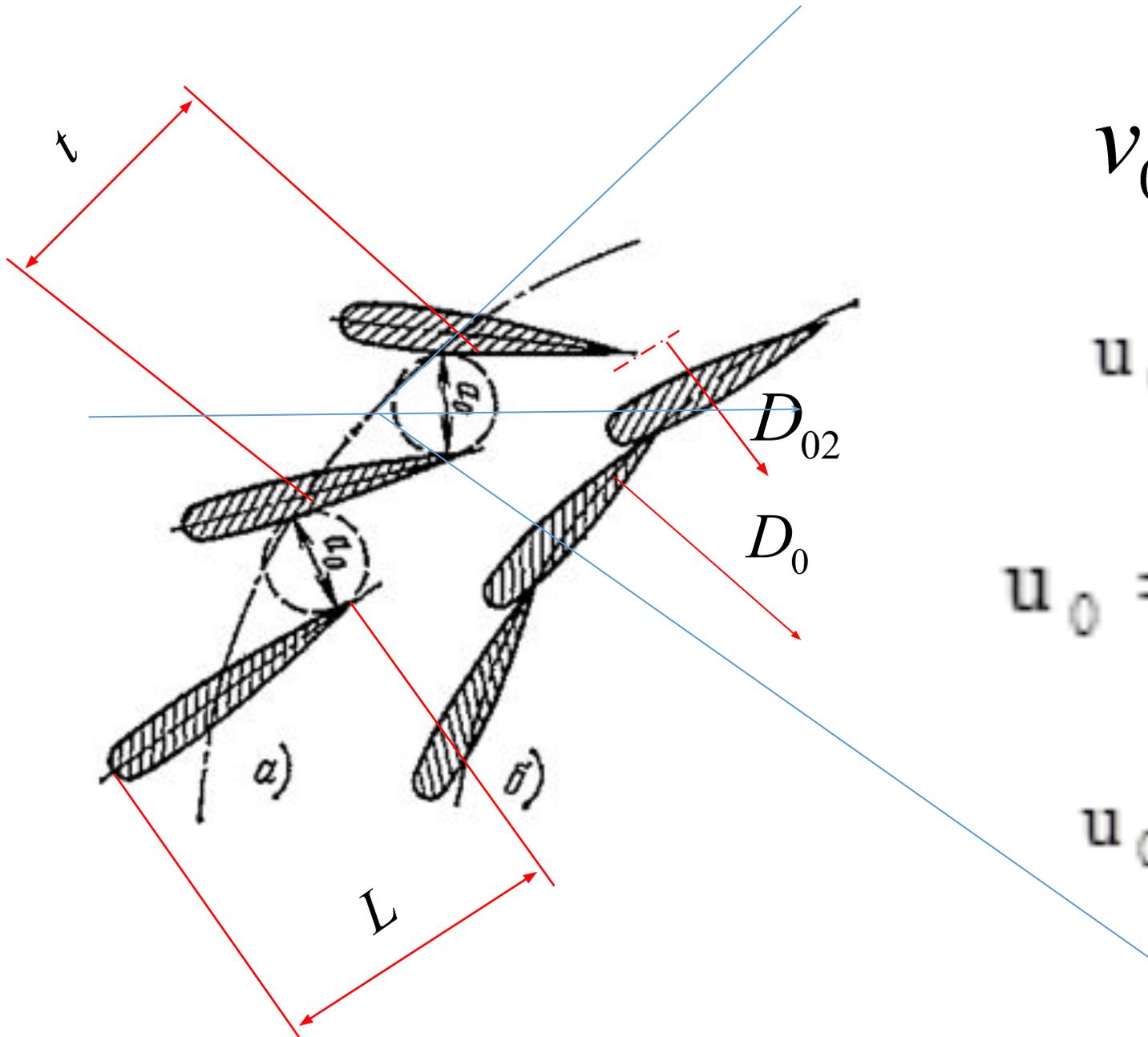


Лекция 3, а

Основное энергетическое уравнение турбины.

Кавитация в гидромашинах.

Режимы работы гидромашин и их регулирование. КПД гидромашин.

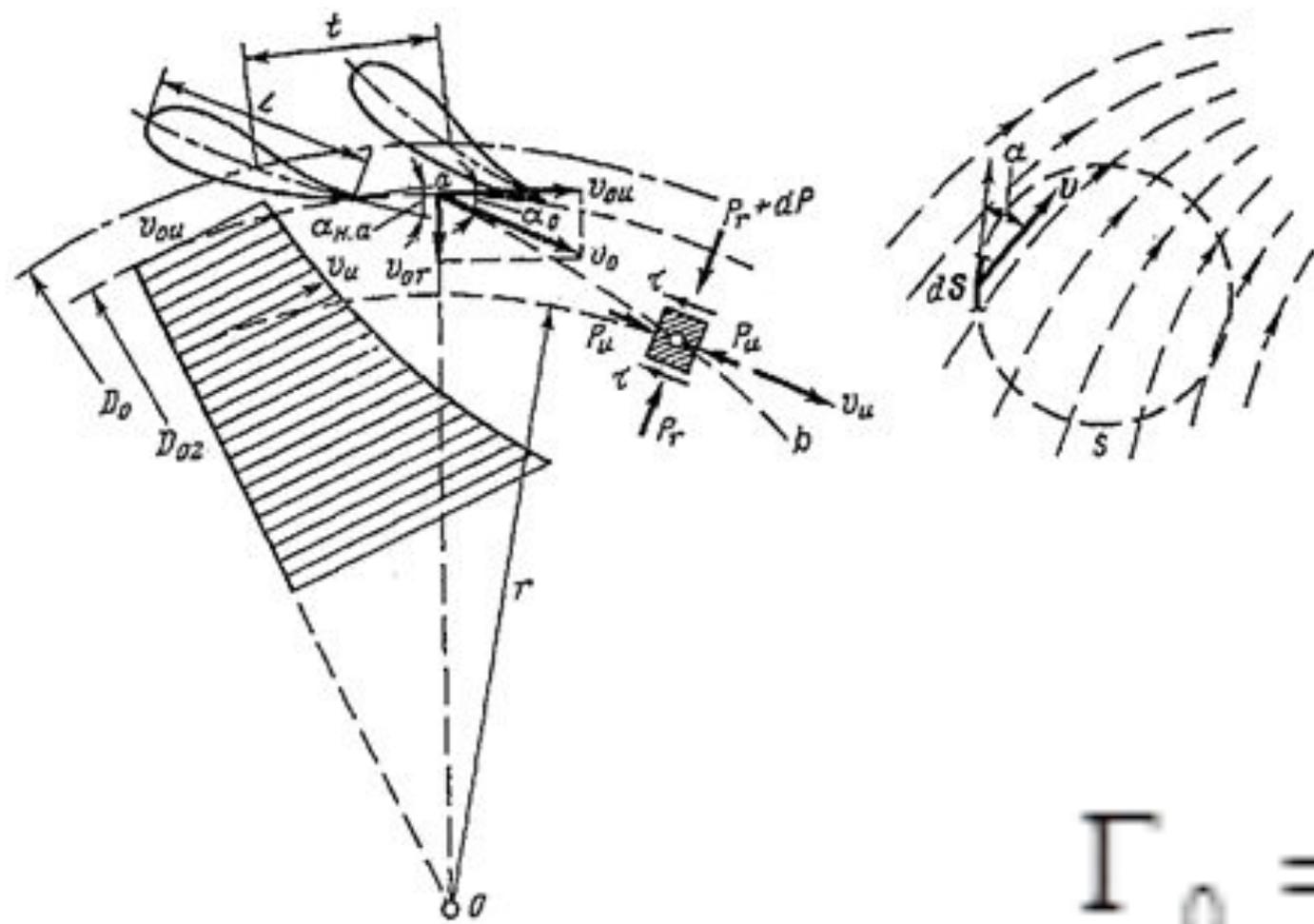


$$v_0 = v_{0r} + v_{0u}$$

$$u_{0r} = Q / \pi D_0 b_0$$

$$u_0 = u_{0r} / \sin a_0$$

$$u_{0u} = u_0 \cos a_0$$



$$\Gamma = \int_S u \cos(\nu dS) dS$$

$$\Gamma_0 = \pi D_{02} u_0 \cos a_0$$

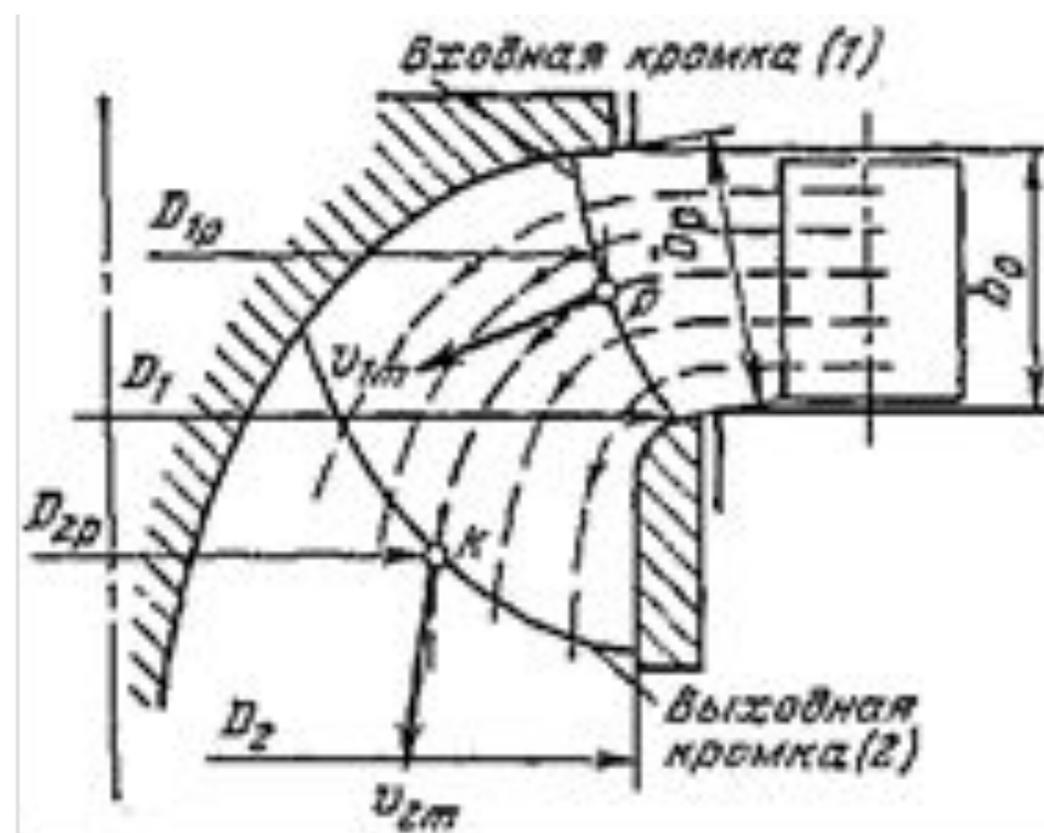
$$\frac{d(mv_{\vartheta}r)_0}{dt} = \sum M_0$$

$$\frac{d(mv_{\vartheta}r)_0}{dt} = 0 \text{ или } mv_{\vartheta}r = \text{const}$$

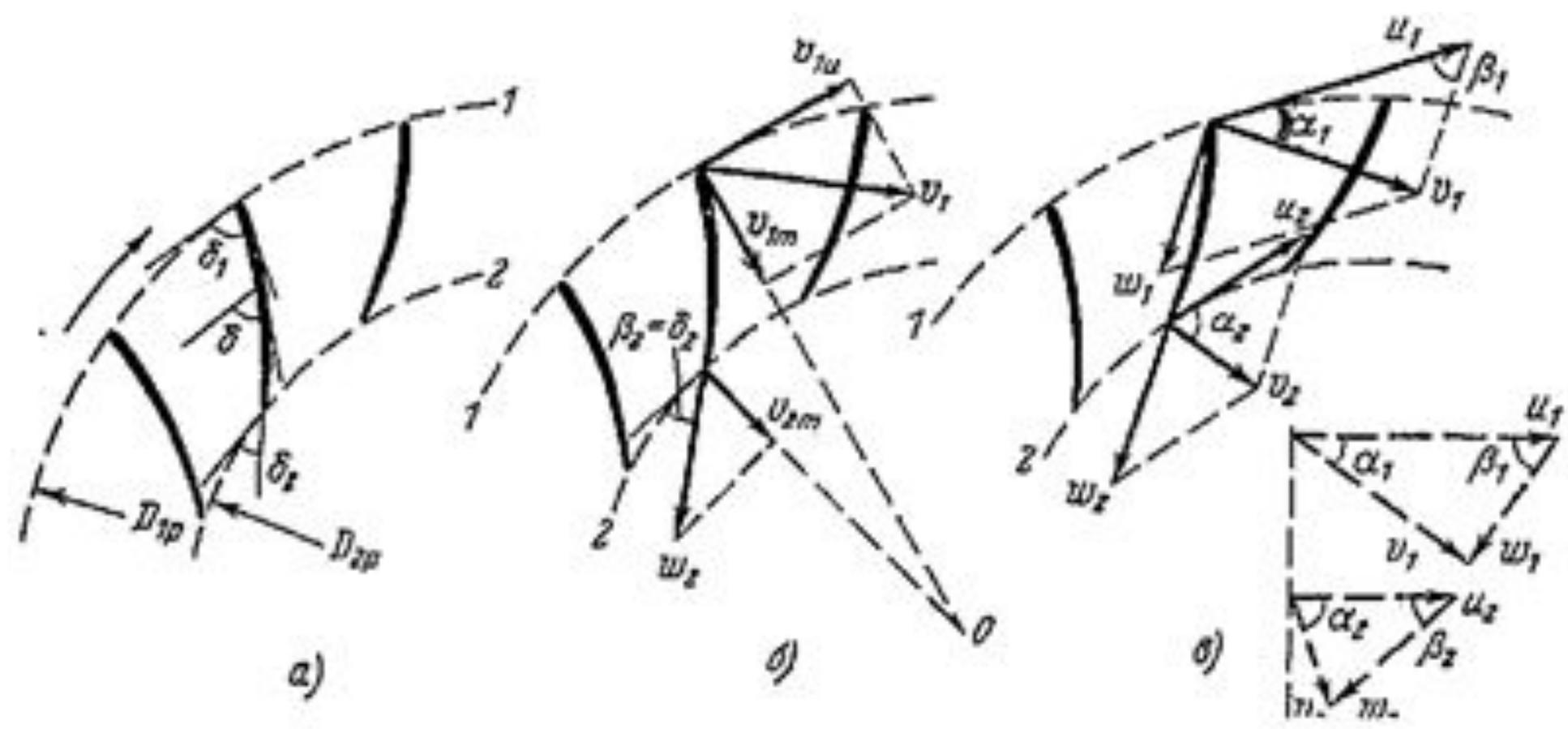
$$v_{\vartheta}r = \text{const}$$

$$v_{\vartheta} = v_{0\vartheta} \frac{0,5D_{02}}{r}$$

$$\Gamma = \Gamma_0 = \text{const}$$



$$v = u + w$$



$$u = \pi D n / 60$$

$$u_m = Q / F_i$$

$$F_1 = \pi D_{1p} b_p$$

$$v_{1m} = \frac{Q}{\pi D_{1p} b_p}$$

$$v_{1u} = v_{0u} \frac{D_{02}}{D_{1p}}$$

$$v_1 = v_{1m} + v_{1u}$$

$$u_1 = \pi D_{1p} n / 60$$

$$u_2 = \pi D_{2p} n / 60 \text{ и } u_{2m} = Q / F_2$$

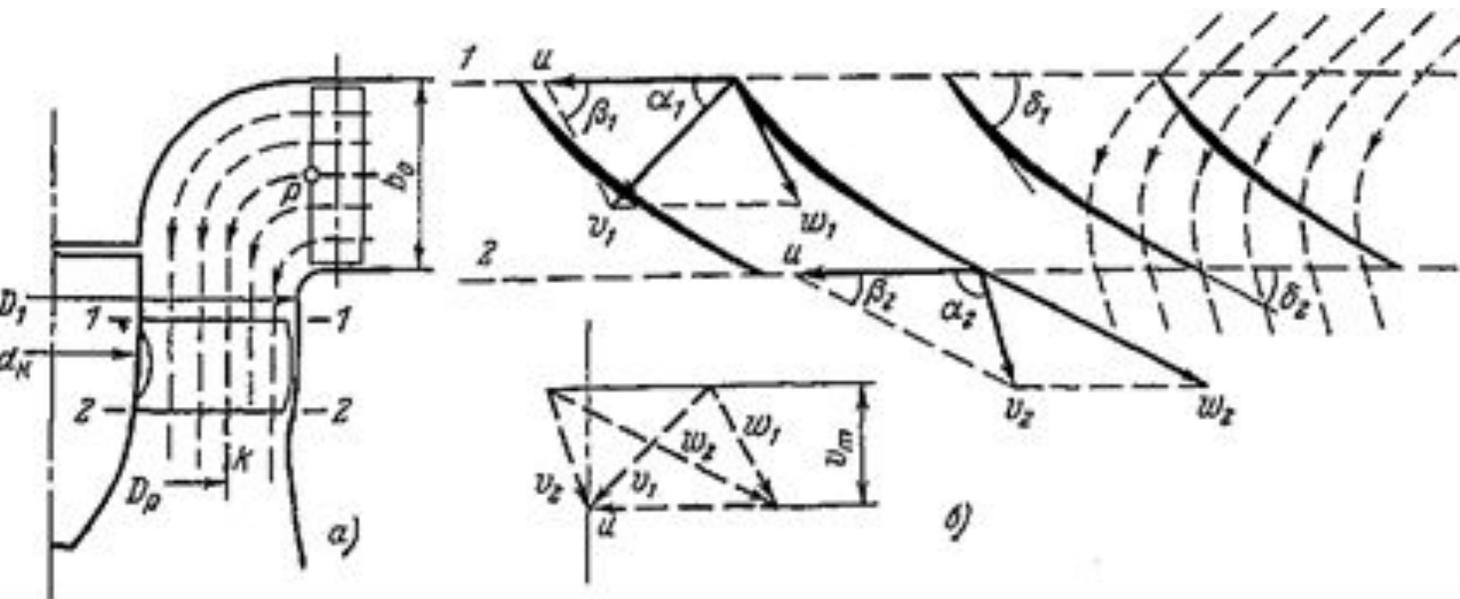
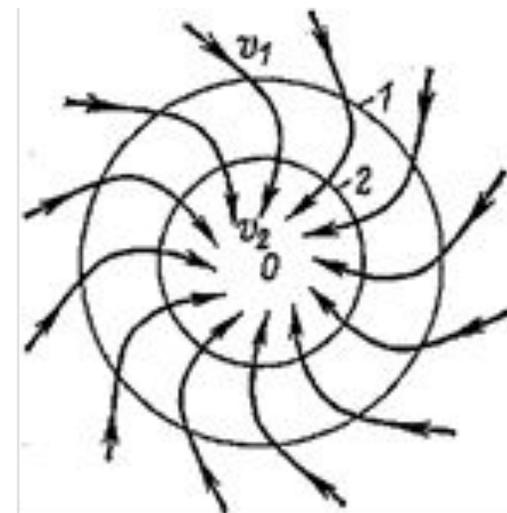
$$\beta_2 = \delta_2$$

$$w_2 = u_{2m} / \sin \delta_2$$

$$D_{lp} = D_{2p} = D_p$$

$$D_p \sqrt{0.5(D_1^2 + d_k^2)}$$

$$u_1 = u_2 = u = \frac{\pi D_p n}{60} \text{ и } v_{1m} = v_{2m} = v_m = \frac{4Q}{\pi(D_1^2 - d_k^2)}$$



$$V_1 = V_{1m} + V_{1u}$$