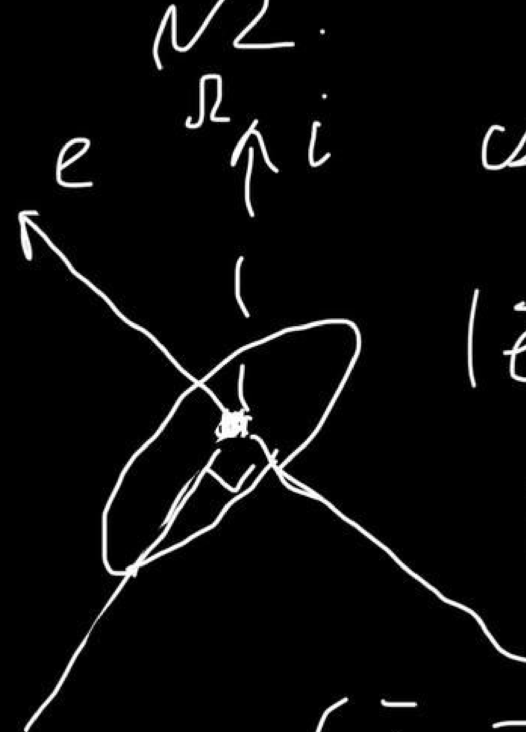

$\cos(\bar{e}, \bar{i}) = \text{const}$

$(\dot{\bar{e}}, \bar{i}) = 0$

$\dot{\bar{e}} = \bar{\omega} \times \bar{e}$

$(\bar{\omega}, \bar{e}, \bar{i}) = 0$

$$\bar{\omega} = \bar{\omega}_1 + \bar{\omega}_2 = \underbrace{\omega_1}_{= \Omega} i + \omega_2 e$$

$$\Lambda_1 = \cos\frac{\varphi_1}{2} + e \sin\frac{\varphi_1}{2}$$

$$\varphi_1 = \int_0^t \omega_1 \, dt = \Omega t$$

$$e(t) = \Lambda_1 \circ e \circ \bar{\Lambda}_1$$

$$\Lambda_2 = \cos\frac{\varphi_2}{2} + e(t)\sin\frac{\varphi_2}{2}$$

$$\varphi_2 = \int_0^t \omega_2 \, dt$$

Тогда $\Lambda = \Lambda_1 \circ \Lambda_2 =$

$$= \left(\cos\frac{\Omega t}{2} + i\sin\frac{\Omega t}{2}\right) \circ \left(\cos\frac{\varphi_2}{2} + \Lambda_1 \circ e \circ \bar{\Lambda}_1 \sin\frac{\varphi_2}{2}\right)$$

Если $\varphi_2 \equiv 0$, то

$$\Lambda = \cos\frac{\Omega t}{2} + i\sin\frac{\Omega t}{2}.$$

N^3.

$$\dot{\Lambda} = \omega \cdot \frac{\Lambda}{2}$$

$$\Lambda(t+dt) = \Lambda(t) + \omega \cdot \frac{\Lambda}{2} dt$$

$$\|\Lambda(t+dt)\| = \left(\Lambda + \omega \frac{\Lambda}{2} dt\right) \cdot \left(\bar{\Lambda} - \bar{\Lambda} \frac{\omega dt}{2}\right)$$

$$= \Lambda \bar{\Lambda} + \frac{1}{2} \cancel{\omega \Lambda \bar{\Lambda} dt} - \frac{1}{2} \cancel{\Lambda \bar{\Lambda} \omega dt} - \frac{1}{4} \omega \Lambda \bar{\Lambda} \omega \underbrace{dt^2}_{0}$$

$$= \|\Lambda(t)\|$$