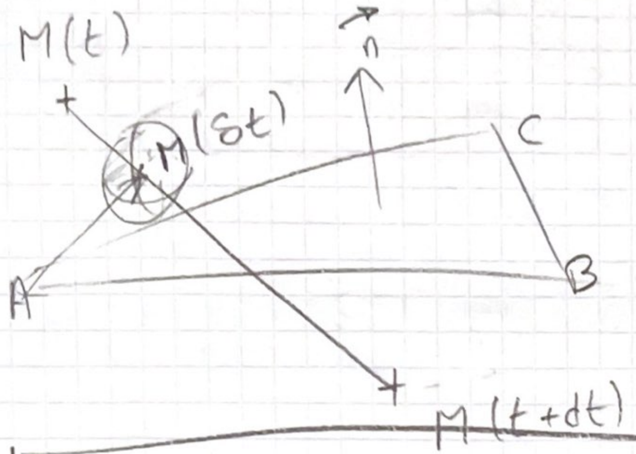

$$\boxed{M(\delta t) = M(t) + k \times \overrightarrow{M(t)M(t+dt)}}$$

Soit H le projeté de $M(\delta t)$ sur le plan

On résout pour l'inconnue k et on suppose $\| M(\delta t) - H \| = r$

rayon de la sphere

$$H = \overrightarrow{AM(\delta t)} - \frac{\overrightarrow{AM(\delta t)} \cdot \vec{n}}{\vec{n} \cdot \vec{n}} \vec{n}$$

$$\| M(\delta t) - H \| = \sqrt{\langle M(\delta t) - H \mid M(\delta t) - H \rangle}$$

$$\| M(\delta t) - H \|^2 = \langle M(\delta t) - H \mid M(\delta t) - H \rangle$$

$$= \langle M(\delta t) \mid M(\delta t) - H \rangle - \langle H \mid M(\delta t) - H \rangle$$

$$= \langle M(\delta t) \mid M(\delta t) \rangle - \langle M(\delta t) \mid H \rangle - \langle H \mid M(\delta t) \rangle + \langle H \mid H \rangle$$

$$= \| M(\delta t) \|^2 - 2 \langle M(\delta t) \mid H \rangle + \| H \|^2$$

$$= r$$