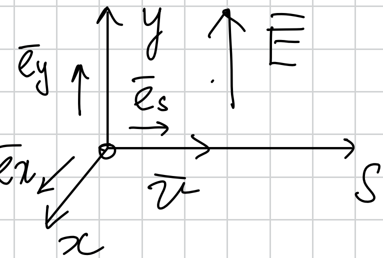
$$\frac{d\vec{S}}{dt} = \vec{S} \times (\vec{\Omega}_{MDM} + \vec{\Omega}_{EDM}), \tag{1.1a}$$

$$\vec{\Omega}_{MDM} = \frac{q}{m\gamma}\left[(\gamma G + 1)\,\vec{B}_\perp + (1+G)\,\vec{B}_\parallel - \gamma\left(G + \frac{1}{\gamma+1}\right)\frac{\vec{\beta}\times\vec{E}}{c}\right], \tag{1.1b}$$

$$\frac{d\bar{S}}{dt} = \frac{q}{m\cancel{\gamma}}\left(-\cancel{\gamma}\left(G + \frac{1}{\gamma+1}\right)\frac{[\overset{a}{\bar{S}}[\overset{b}{\bar{\beta}}\times\overset{c}{\bar{E}}]]}{c}\right)$$



$$\bar{E} = \{0, 0, E_y\} \qquad (x, s, y)$$

$$[\bar{S}[\bar{\beta}\times\bar{E}]] = \bar{\beta}(\bar{S},\bar{E}) - \bar{E}(\bar{S}\bar{\beta})$$

$$\bar{\beta} = \frac{\bar{v}}{c} \qquad \bar{v} = \{v_x, v_s, v_y\}$$

$$\frac{d\bar{S}}{dt} = \underbrace{-\frac{q}{m}\left(G + \frac{1}{\gamma+1}\right)\cdot\frac{1}{c^2}}_{A}[\bar{S}[\bar{v},\bar{E}]]$$

1) $\bar{S} = \{0, 0, S_y\}$

$$[\bar{v},\bar{E}] = \begin{vmatrix} \bar{e}_x & \bar{e}_s & \bar{e}_y \\ v_x & v_s & v_y \\ 0 & 0 & E_y \end{vmatrix} =$$

$$= \bar{e}_x(v_s E_y) - \bar{e}_s(v_x E_y) + 0$$

$$\frac{d\bar{S}}{dt} = A\cdot\begin{vmatrix} \bar{e}_x & \bar{e}_s & \bar{e}_y \\ 0 & 0 & S_y \\ v_s E_y & -v_x E_y & 0 \end{vmatrix} = A\bar{e}_x S_y v_x E_y +$$

$$+A\bar{e}_s S_y v_s E_y = A S_y E_y (v_x \bar{e}_x - v_s \bar{e}_s)$$

2) $\bar{S} = \{0, S_s, 0\}$

$$\frac{d\bar{S}}{dt} = A \cdot \begin{vmatrix} \bar{e}_x & \bar{e}_s & \bar{e}_y \\ 0 & S_s & 0 \\ v_s E_y & -v_x E_y & 0 \end{vmatrix} =$$

$$= -\bar{e}_y S_s v_s E_y A$$

3) $\bar{S} = \{S_x, 0, 0\}$

$$\frac{d\bar{S}}{dt} = A \begin{vmatrix} \bar{e}_x & \bar{e}_s & \bar{e}_y \\ S_x & 0 & 0 \\ v_s E_y & -v_x E_y & 0 \end{vmatrix} = -A\bar{e}_y S_x v_x E_y$$