The time-coordinate of the cutting point from any two individual linear SUV courses f and g, referred to as t_{ref}, is obtained by:

$$t_{ref} = \frac{a_g - a_f}{\mathrm{b_f} - b_g} \qquad \text{eq 1}$$

with a and b being the intercept and slope of the corresponding linear SUV course. As a next step, the individual intercepts a_f and a_g from line f and g are eliminated:

$$\mathrm{b}_i(SUV_{t0}) = \mathrm{a'} + \mathrm{b'} \cdot SUV_{t0} \qquad \text{eq 2}$$

From equation (2) for the secondary linear relationship between individual SUV slopes (b_i) and measured SUVs at a fixed time point (t_0) one can calculate the slope b_f and b_g of line f and line g in dependency on the intercept and slope, a' and b', of the secondary underlying linear relationship and resolve equation 2 for the individual intercepts a_f and a_g (exemplarily shown for line f):

$$\begin{aligned} \mathrm{b}_f &= \mathrm{a'} + \mathrm{b'} \cdot (a_f + b_f \cdot t_0) \\ \Rightarrow \mathrm{a_f} &= \frac{b_f - \mathrm{a'}}{\mathrm{b'}} - b_f \cdot t_0 \end{aligned} \qquad \text{eq 3}$$

This expression for a_f and a_g, respectively, can now be inserted into eq 1 yielding

$$\begin{aligned} t_{ref} &= \frac{\frac{b_g - a'}{b'} - b_g \cdot t_0 - \left(\frac{b_f - \mathrm{a'}}{b'} - b_f \cdot t_0\right)}{b_f - b_g} \\ &= \frac{t_0(b_f - b_g) - \frac{(b_f - b_g)}{b'}}{b_f - b_g} \qquad \text{eq 4} \\ &= t_0 - \frac{1}{b'} \end{aligned}$$

The resulting expression for t_{ref} is not dependent on any individual intercepts a_i nor on individual slopes b_i.

The SUV-coordinate of the reference point, i.e. SUV_{ref}, is found by inserting t_{ref} into any individual time course, e.g. line f:

$$SUV_{ref} = \mathrm{a}_f + b_\mathrm{f} \cdot (\mathrm{t}_0 - \frac{1}{\mathrm{b'}}) \qquad \text{eq 5}$$

By inserting the expression for the individual intercept of line f (a_f from eq 3) one ends up with

$$SUV_{ref} = \frac{b_f - \mathrm{a}'}{\mathrm{b}'} - b_f \cdot t_0 + b_\mathrm{f} \cdot (\mathrm{t}_0 - \frac{1}{\mathrm{b}'})$$

$$= -\frac{a'}{b'}$$

eq 6