Constant Speed Transform

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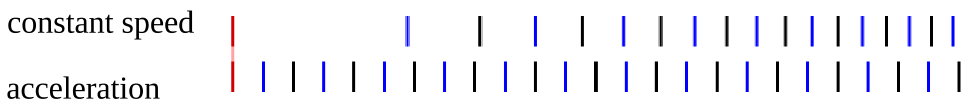
In this paper I introduce the constant speed transform.

A constant speed transform is way of transforming space-time such that the speed appears constant.



Without events in space-time, it is not possible to measure space nor time. When the events in space-time are set up properly, they can give an illusion of acceleration when there is constant speed, or an illusion of constant speed when there is acceleration.

In space, it is not easy to visualize time intervals between events changing, due to acceleration.
In time, it is not easy to visualize distances between events changing, due to acceleration.
However, one can transform the content of space-time from space to time and vice versa to visualize the changes between space-time events. I call this the "constant speed transform", because acceleration in one space-time appears as constant in the other space-time.

For any invertible function `f` from time to space:

$\because \quad f : \text{time} \to \text{space}$

There exists a tuple `(t, x) : time × space` such that:

$\therefore \quad x - f(t) = f^{-1}(x) - t = 0$

Proof:

$\because \quad x - f(t) = 0$
$\therefore \quad f(t) = x$

$\because \quad f^{-1}(x) - t = 0$
$\therefore \quad f^{-1}(x) = t$

Q.E.D.

This is a partial adjoint path `g` with `sub` as the intersecting adjoint normal path of the path sets:

$$\forall\ t : [f]\ x\ \{\ g\{(= x), (= t)\}[f^{-1} \times id \to id] <=> g\{(= x), (= t)\}[id \times f \to id] <=> sub\ \}$$