A signal emitted at A arrives simultaneously in B and C in K' but not in K.

**Event** position + time

**World point** position + time coordinates

**World line**: space-time coordinates of a particle as a function of time.

If A and B are connected by a light signal then

\[(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2 - c^2(t_2 - t_1)^2 = 0\]

\[(x_1' - x_1)^2 + (y_1' - y_1)^2 + (z_1' - z_1)^2 - c^2(t_1' - t_1)^2 = 0\]

Relativistic interval between two events

\[s_{12} = \sqrt{c^2(t_1 - t_2)^2 + (x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2}\]

Infinitesimally

\[ds^2 = c^2dt^2 - dx^2 - dy^2 - dz^2\]