	Space with Time	
Measure of motion	*Time speed* $v_t = ds/dt \sim \ell^{-1}$	*Space speed* $v_s \Leftarrow \ell^{-1} = (dt/ds)^{-1}$
Mean speed	*Time mean speed* $(\Sigma\, v_i/n)$	*Space mean speed* $(\Sigma\, \ell_i/n)^{-1}$
Normalized speed	$\beta = v/c \sim (\ell/k)^{-1}$	$\beta \cong (\ell/k)^{-1} \sim (v/c)$
Conversion & Lorentz factors Time-length matrix	$ct = x$ $\gamma = 1/\sqrt{1-\beta^2}$	$\begin{pmatrix}\gamma & 0\\ 0 & 1/\gamma\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$
Galilean transformations	$\begin{pmatrix}1 & 0\\ -v & 1\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$	$\begin{pmatrix}1 & -v/c^2\\ 0 & 1\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$
Normalized GTs	$\begin{pmatrix}1 & 0\\ -\beta c & 1\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$	$\begin{pmatrix}1 & -\beta/c\\ 0 & 1\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$
Standard GTs	$\begin{pmatrix}1 & 0\\ -\beta & 1\end{pmatrix}\begin{pmatrix}ct\\ x\end{pmatrix} = \begin{pmatrix}ct'\\ x'\end{pmatrix}$	$\begin{pmatrix}1 & -\beta\\ 0 & 1\end{pmatrix}\begin{pmatrix}ct\\ x\end{pmatrix} = \begin{pmatrix}ct'\\ x'\end{pmatrix}$
Lorentz transformation	$\begin{pmatrix}\gamma & -\gamma v/c^2\\ -\gamma v & \gamma\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$	
Normalized LT	$\begin{pmatrix}\gamma & -\beta\gamma/c\\ -\beta\gamma c & \gamma\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$	
Symmetric LT	$\begin{pmatrix}\gamma & -\beta\gamma\\ -\beta\gamma & \gamma\end{pmatrix}\begin{pmatrix}ct\\ x\end{pmatrix} = \begin{pmatrix}ct'\\ x'\end{pmatrix}$	

	Time with Space	
Measure of motion	*Time pace* $\ell_t \Leftarrow v^{-1} = (ds/dt)^{-1}$	*Space pace* $\ell_s = dt/ds \sim v^{-1}$
Mean pace	*Time mean pace* $(\Sigma\, v_i/n)^{-1}$	*Space mean pace* $(\Sigma\, \ell_i/n)$
Normalized pace	$\beta^{-1} = (v/c)^{-1} \sim \ell/k$	$\beta^{-1} = \ell/k \sim (v/c)^{-1}$
Conversion & Lorentz factors Length-time matrix	$\begin{pmatrix}\gamma & 0\\ 0 & 1/\gamma\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$	$kx = t$ $-\beta\gamma = 1/\sqrt{1-\beta^{-2}}$
Galilean transformations	$\begin{pmatrix}1 & 0\\ -k^2/\ell & 1\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$	$\begin{pmatrix}1 & -1/\ell\\ 0 & 1\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$
Normalized GTs	$\begin{pmatrix}1 & 0\\ -\beta k & 1\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$	$\begin{pmatrix}1 & -\beta/k\\ 0 & 1\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$
Standard GTs	$\begin{pmatrix}1 & 0\\ -\beta & 1\end{pmatrix}\begin{pmatrix}t\\ kx\end{pmatrix} = \begin{pmatrix}t'\\ kx'\end{pmatrix}$	$\begin{pmatrix}1 & -\beta\\ 0 & 1\end{pmatrix}\begin{pmatrix}t\\ kx\end{pmatrix} = \begin{pmatrix}t'\\ kx'\end{pmatrix}$
Lorentz transformation	$\begin{pmatrix}\beta\gamma\ell & -\beta\gamma k\\ -\beta\gamma & \beta\gamma\ell/k\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$	
Lorentz transformation	$\begin{pmatrix}\gamma & -\gamma/\ell\\ -\gamma k^2/\ell & \gamma\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$	
Normalized LT	$\begin{pmatrix}\gamma & -\beta\gamma/k\\ -\beta\gamma k & \gamma\end{pmatrix}\begin{pmatrix}t\\ x\end{pmatrix} = \begin{pmatrix}t'\\ x'\end{pmatrix}$	
Symmetric LT	$\begin{pmatrix}\gamma & -\beta\gamma\\ -\beta\gamma & \gamma\end{pmatrix}\begin{pmatrix}t\\ kx\end{pmatrix} = \begin{pmatrix}t'\\ kx'\end{pmatrix}$	