Subject parameter distribution:

$$\underbrace{\begin{bmatrix}\text{T0m\_ly}_i\\ \text{mm\_y}_i\end{bmatrix}}_{\boldsymbol{\phi}(i)} \sim \text{tform}\left\{\text{N}\left(\begin{bmatrix}\text{raw\_T0m\_ly}\\ \text{raw\_mm\_y}\end{bmatrix}, \begin{bmatrix}\text{rawPCov\_1\_1} & \text{rawPCov\_2\_1}\\ \text{rawPCov\_2\_1} & \text{rawPCov\_2\_2}\end{bmatrix}\right)\right\}$$

Initial latent state:

$$\underbrace{\left[\text{ly}\right](t_0)}_{\boldsymbol{\eta}(t_0)} \sim \text{N}\left(\underbrace{\left[\text{T0m\_ly}\right]}_{\underbrace{}_{\text{T0MEANS}}}, \underbrace{\mathit{covsdcor}\left\{\left[\text{Pcorsqrt\_1\_1}\right]\right\}}_{\underbrace{\mathbf{Q^*}_{t0}}_{\text{T0VAR}}}\right)$$

Deterministic change:

$$\underbrace{\mathrm{d}\left[\text{ly}\right](t)}_{\mathrm{d}\boldsymbol{\eta}(t)} = \left(\underbrace{\left[\text{drift\_ly}\right]}_{\underbrace{\mathbf{A}}_{\text{DRIFT}}} \underbrace{\left[\text{ly}\right](t)}_{\boldsymbol{\eta}(t)} + \underbrace{\left[0\right]}_{\underbrace{\mathbf{b}}_{\text{CINT}}}\right) \mathrm{d}t \quad +$$

Random change:

$$\underbrace{\mathit{cholsdcor}\left\{\left[\text{diff\_ly}\right]\right\}}_{\underbrace{\mathbf{G}}_{\text{DIFFUSION}}} \underbrace{\mathrm{d}\left[W_1\right](t)}_{\mathrm{d}\mathbf{W}(t)}$$

Observations:

$$\underbrace{\left[\text{y}\right](t)}_{\mathbf{Y}(t)} = \underbrace{\left[1\right]}_{\underbrace{\boldsymbol{\Lambda}}_{\text{LAMBDA}}} \underbrace{\left[\text{ly}\right](t)}_{\boldsymbol{\eta}(t)} + \underbrace{\left[\text{mm\_y}\right]}_{\underbrace{\boldsymbol{\tau}}_{\text{MANIFESTMEANS}}} + \underbrace{\left[0.2\right]}_{\underbrace{\boldsymbol{\Theta}}_{\text{MANIFESTVAR}}} \underbrace{\left[\epsilon_1\right](t)}_{\boldsymbol{\epsilon}(t)}$$

Latent noise per time step: $\Delta\left[W_{j\in[1,1]}\right](t-u) \sim \text{N}(0, t-u)$

Observation noise: $\left[\epsilon_{j\in[1,1]}\right](t) \sim \text{N}(0,1)$

cholsdcor converts lower tri matrix of std dev and unconstrained correlation to Cholesky factor covariance.

covsdcor = transposed cross product of cholsdcor, to give covariance.

See Driver & Voelkle (2018) p11.