$$\text{Subject parameter distribution: } \underbrace{\begin{bmatrix} \text{T0m\_eta1}_i \\ \text{slope}_i \end{bmatrix}}_{\boldsymbol{\phi}(i)} \sim \text{tform}\left\{ \text{N}\left( \begin{bmatrix} \text{raw\_T0m\_eta1} \\ \text{raw\_slope} \end{bmatrix}, \begin{bmatrix} \text{raw\_PCov\_1\_1} & \text{raw\_PCov\_2\_1} \\ \text{raw\_PCov\_2\_1} & \text{raw\_PCov\_2\_2} \end{bmatrix} \right) \right\}$$

$$\text{Initial latent states: } \underbrace{\left[\text{eta1}\right](t_0)}_{\boldsymbol{\eta}(t_0)} \sim \text{N}\left( \underbrace{\underbrace{\left[\text{T0m\_eta1}\right]}_{}}_{\text{T0MEANS}}, \underbrace{\underbrace{\mathit{covsdcor}\left\{\left[\text{Pcorsqrt\_1\_1}\right]\right\}}_{\mathbf{Q^*}_{t0}}}_{\text{T0VAR}} \right)$$

$$\text{Deterministic change: } \underbrace{\text{d}\left[\text{eta1}\right](t)}_{\text{d}\boldsymbol{\eta}(t)} = \left( \underbrace{\underbrace{\left[0\right]}_{\mathbf{A}}}_{\text{DRIFT}} \underbrace{\left[\text{eta1}\right](t)}_{\boldsymbol{\eta}(t)} + \underbrace{\underbrace{\left[\text{slope}\right]}_{\mathbf{b}}}_{\text{CINT}} \right) \text{d}t \quad +$$

$$\text{Random change: } \underbrace{\underbrace{\mathit{cholsdcor}\left\{\left[0\right]\right\}}_{\mathbf{G}}}_{\text{DIFFUSION}} \underbrace{\text{d}\left[W_1\right](t)}_{\text{d}\mathbf{W}(t)}$$

$$\text{Observations: } \underbrace{\left[\text{y1}\right](t)}_{\mathbf{Y}(t)} = \underbrace{\underbrace{\left[1\right]}_{\boldsymbol{\Lambda}}}_{\text{LAMBDA}} \underbrace{\left[\text{eta1}\right](t)}_{\boldsymbol{\eta}(t)} + \underbrace{\underbrace{\left[0\right]}_{\boldsymbol{\tau}}}_{\text{MANIFESTMEANS}} + \underbrace{\underbrace{\left[\text{log1p(exp(errorsd\_intercept + errorsd\_byeta1 * eta1))}\right]}_{\boldsymbol{\Theta}}}_{\text{MANIFESTVAR}} \underbrace{\left[\epsilon_1\right](t)}_{\boldsymbol{\epsilon}(t)}$$

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

*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.