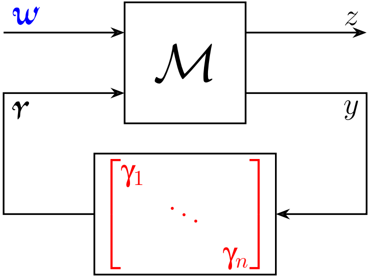
Stochastic Block Diagrams



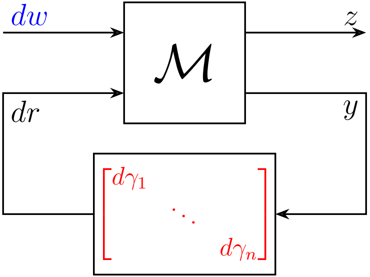
$$\mathbb{E}\left[\boldsymbol{\gamma}(t)\boldsymbol{\gamma}^*(\tau)\right] = \boldsymbol{\Gamma}\delta(t-\tau)$$
$$\mathbb{E}\left[w(t)w^*(\tau)\right] = \mathbf{W}(t)\delta(t-\tau)$$

White Process Representation

$$w := \frac{dw}{dt}$$

$$\boldsymbol{\gamma} := \frac{d\gamma}{dt}$$

$$r := \frac{dr}{dt}$$



$$\mathbb{E}\left[d\gamma(t)d\gamma^*(t)\right] = \boldsymbol{\Gamma}dt$$
$$\mathbb{E}\left[dw(t)dw^*(t)\right] = \mathbf{W}(t)dt$$

Wiener Process Representation

$$\begin{bmatrix} z \\ y \end{bmatrix} = \mathcal{M}\begin{bmatrix} dw \\ dr \end{bmatrix} \iff \begin{bmatrix} z(t) \\ y(t) \end{bmatrix} = \int_0^t M(t-\tau)\begin{bmatrix} dw(\tau) \\ dr(\tau) \end{bmatrix}$$
$$dr(t) = \mathrm{Diag}\big(d\boldsymbol{\gamma}(t)\big)y(t).$$