- DKF state estimate:

$$\hat{\mathrm{x}}_-[n+1] = (\mathrm{A}[n]-\mathrm{A}[n]\mathrm{K}_2[n]\mathrm{C}[n])\hat{\mathrm{x}}_-[n]+\mathrm{A}[n]\mathrm{K}_2[n]y[n]$$

- DKF estimate of desired signal:

$$\hat{d}[n] = \mathrm{C}[n]\hat{\mathrm{x}}_-[n]$$

- Transfer function from y[n] to d[n] estimate:

$$\mathrm{H}_{\mathsf{kal}}(n,z) = \mathrm{C}[n](z\mathbf{I}-\mathrm{A}[n]+\mathrm{A}[n]\mathrm{K}_2[n]\mathrm{C}[n])^{-1}\mathrm{A}[n]\mathrm{K}_2[n]$$

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Wiener and Kalman Filter

- Stationary state model for d[n]:

$$\mathrm{A}[n] = \mathrm{A}, \quad \mathrm{C}[n] = \mathrm{C}, \quad \mathrm{K}_2[n] = \mathrm{K}_2.$$

- Transfer function in this case:

$$\mathrm{H}_{\mathsf{kal}}(z) = \mathrm{C}(z\mathbf{I} - \mathrm{A} + \mathrm{A}\mathrm{K}_2\mathrm{C})^{-1}\mathrm{A}\mathrm{K}_2$$

- DKF is the optimal linear filter with Gaussian statistics for f[n] and v[n].

- Wiener filter and DKF identical for stationary case.