



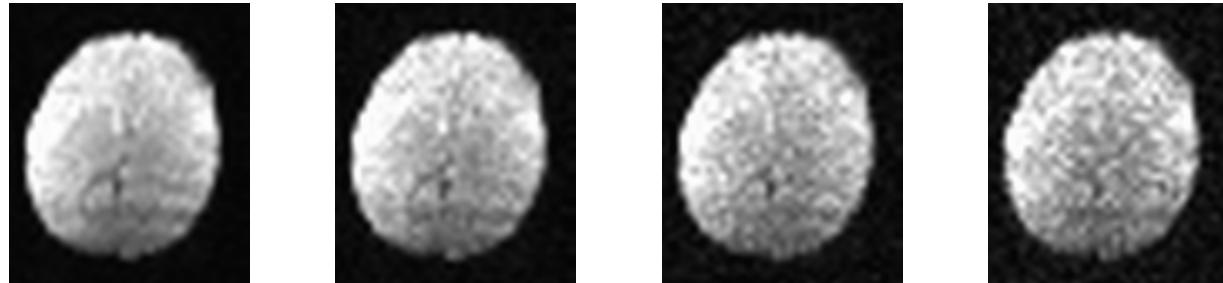
Functional MRI (fMRI)

Signal-to-Noise

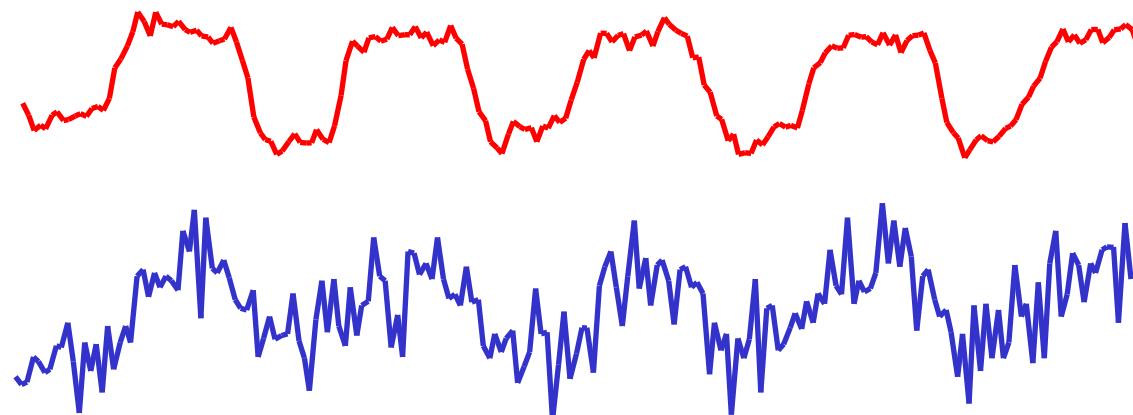


Signal-to-Noise

Signal-to-noise ratio (SNR)

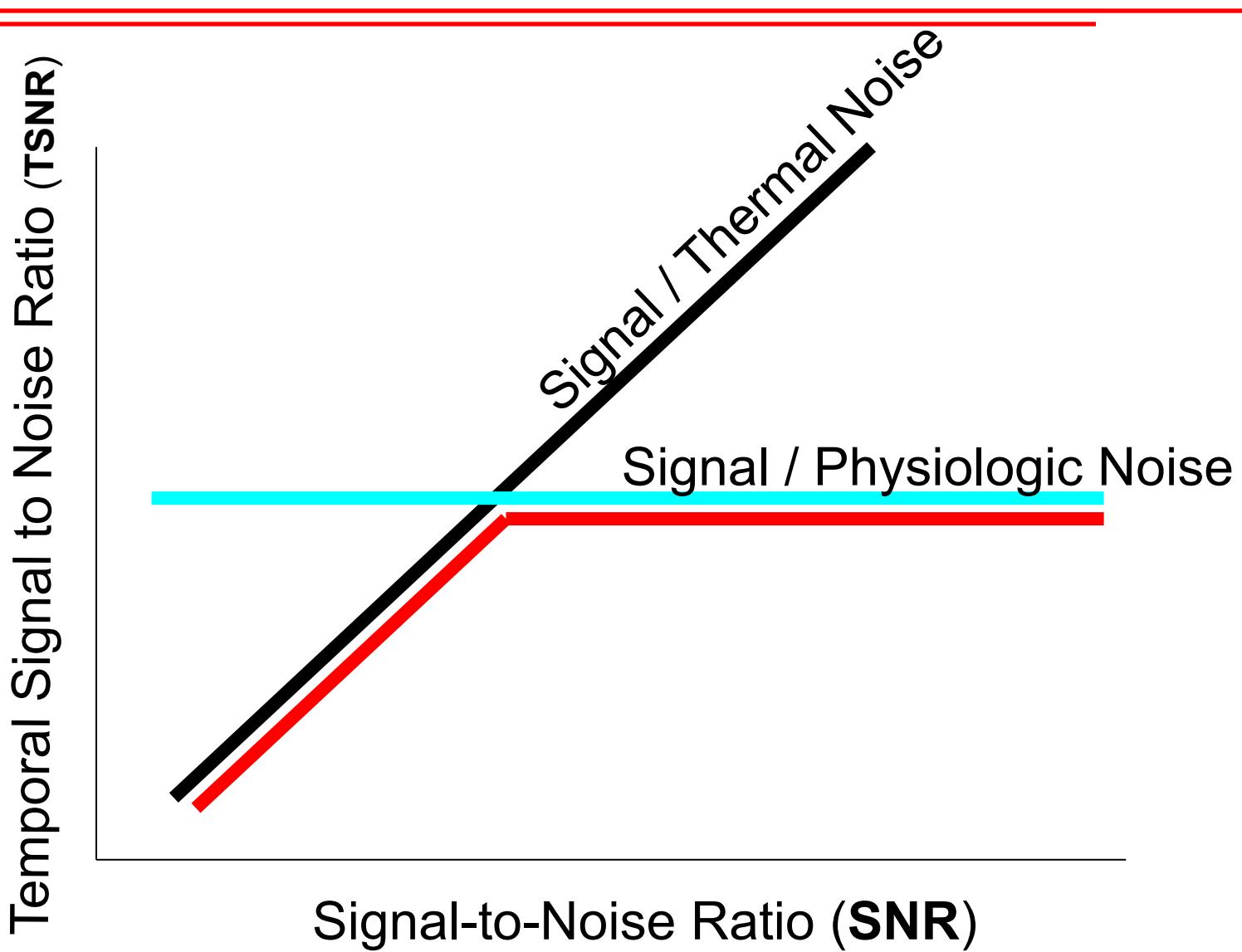


Temporal signal-to-noise ratio (TSNR)





TSNR vs SNR





Signal-to-Noise Ratio (SNR)

See Kruger et al., Magn. Res. Med., 46, 2001.

$$TSNR = \frac{S}{\sigma}$$

$$\sigma = \sqrt{\sigma_0^2 + \sigma_P^2} \quad \sigma_P^2 = \sigma_B^2 + \sigma_{NB}^2 \quad \sigma_B = c_1 \Delta S = c_1 S \Delta R_2^* TE$$
$$\sigma_{NB} = c_2 S$$

$$TSNR = \frac{SNR}{\sqrt{1 + \lambda^2 SNR^2}}$$

$$\lambda^2 = c_1^2 \Delta R_2^{*2} TE^2 + c_2^2$$



TSNR vs SNR

