

Four MTF Residual Models

- Lorentzian

$$f(u) = \frac{1}{p_0 + p_1 u^2}$$

- Polynomial Lorentzian

$$f(u) = \frac{1}{p_0 + p_1 |u|^{p_2} + p_3 |u|^{p_4} + p_5 |u|^{p_6}}$$

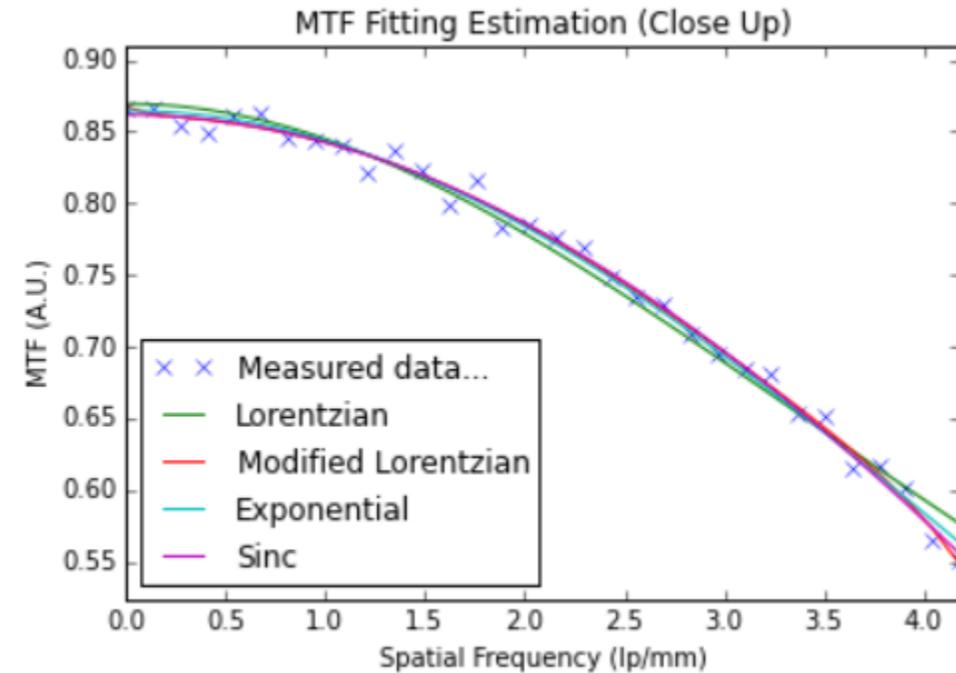
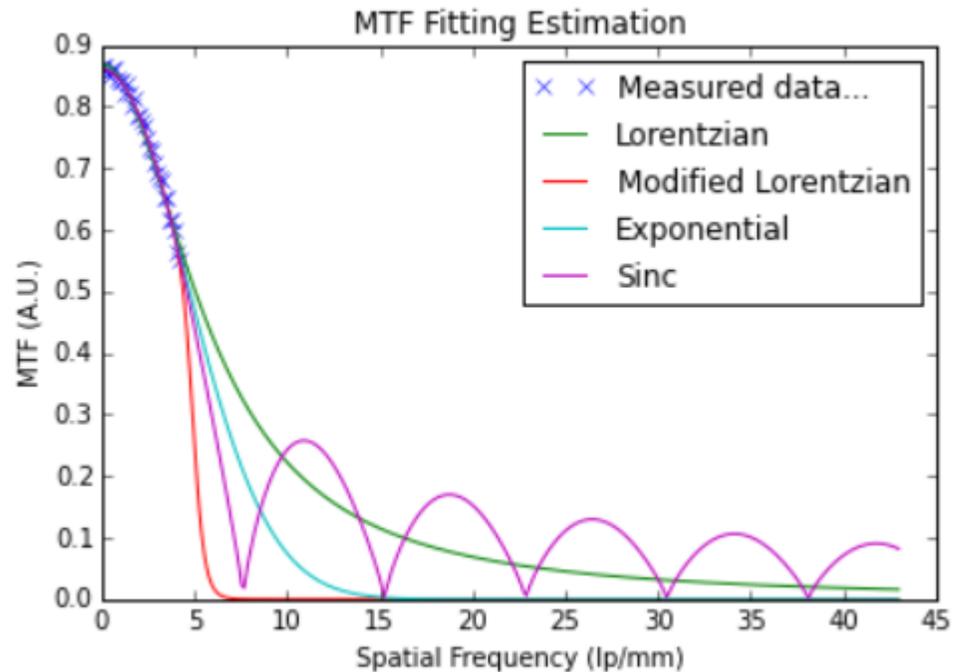
- Gaussian

$$f(u) = p_0 \exp\left(-\frac{u^2}{p_1}\right)$$

- Sinc

$$f(u) = p_0 \left| \left[\frac{\sin(\pi p_1 u)}{\pi p_1 u} \right] \right|^{p_2}$$

Fitting Comparison



1. Sinc model function seems to be most realistic, but requires careful assignment of initial fitting parameters.
 2. Exponential (Gaussian) seems to be the most stable model function since it doesn't jump to haywire data.
 3. Original Lorentzian is also stable to handle and quite close to the Sinc model.
- Thus, we can use Lorentzian as a main residual model but provide options for others:
→ A dedicated Class required.