

Characterisation of the IMU array spectroradiometer

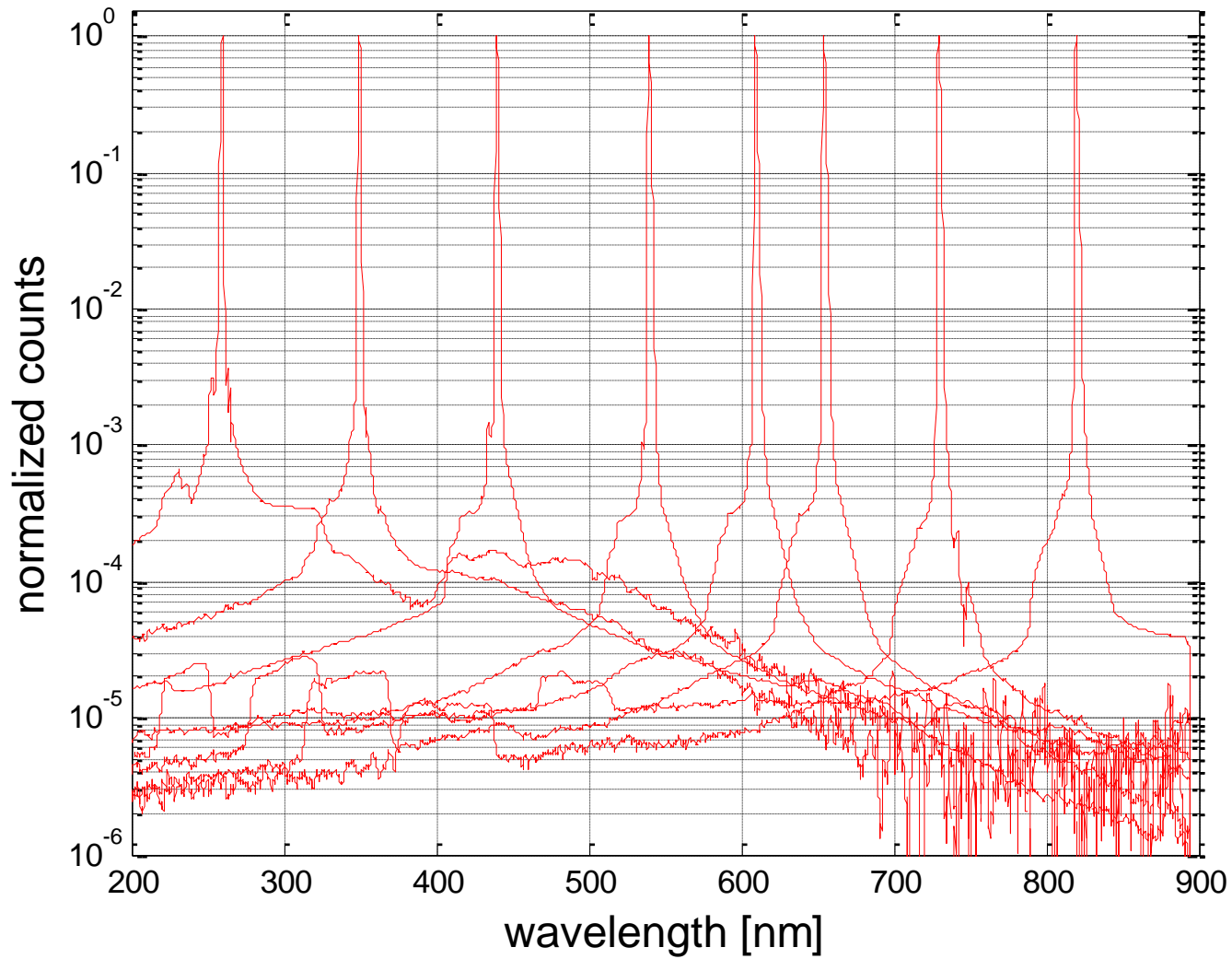
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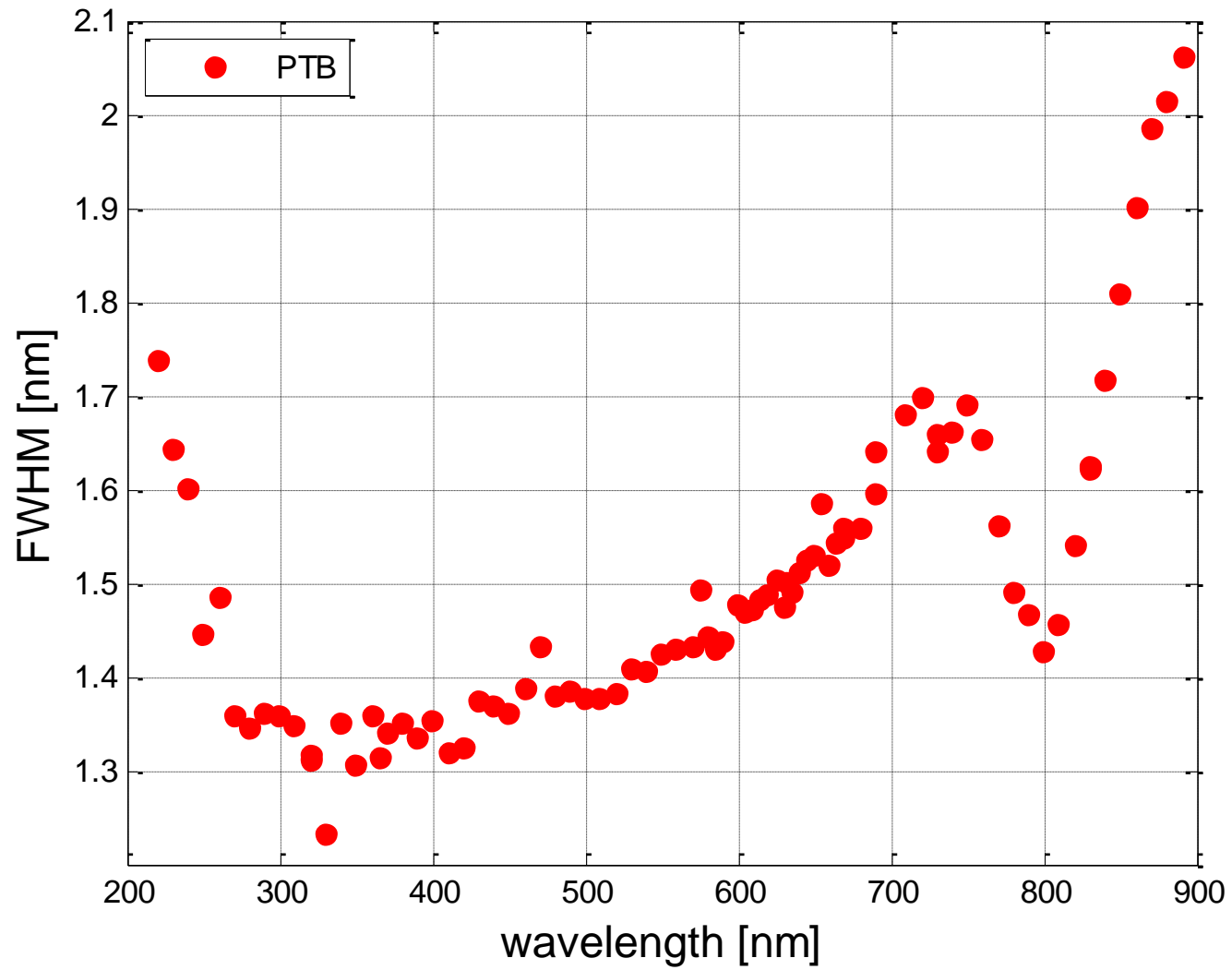
Overview

- Bandwidth and slit function
- Wavelength calibration
- Stray light correction

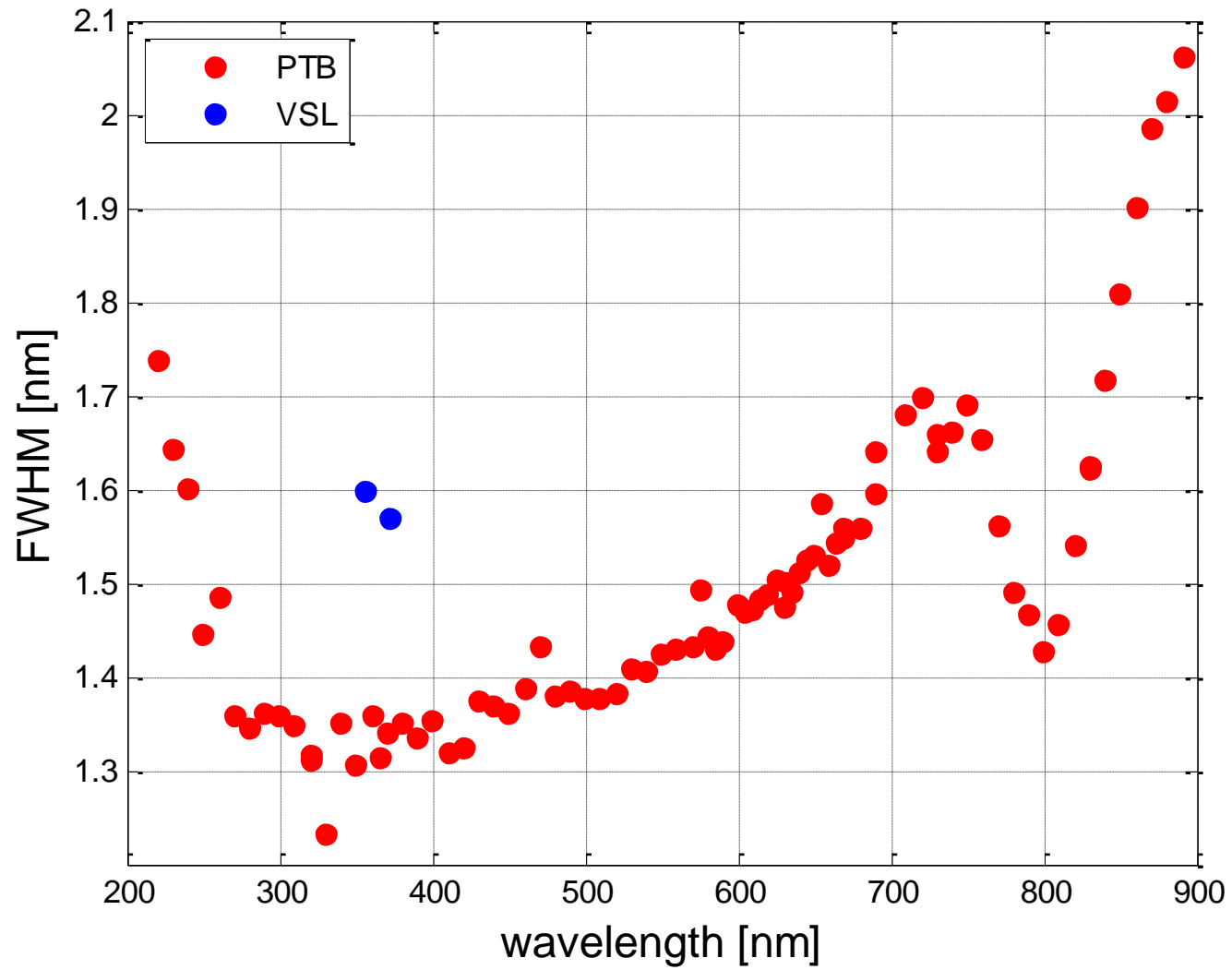
Slitfunction OO-USB4000



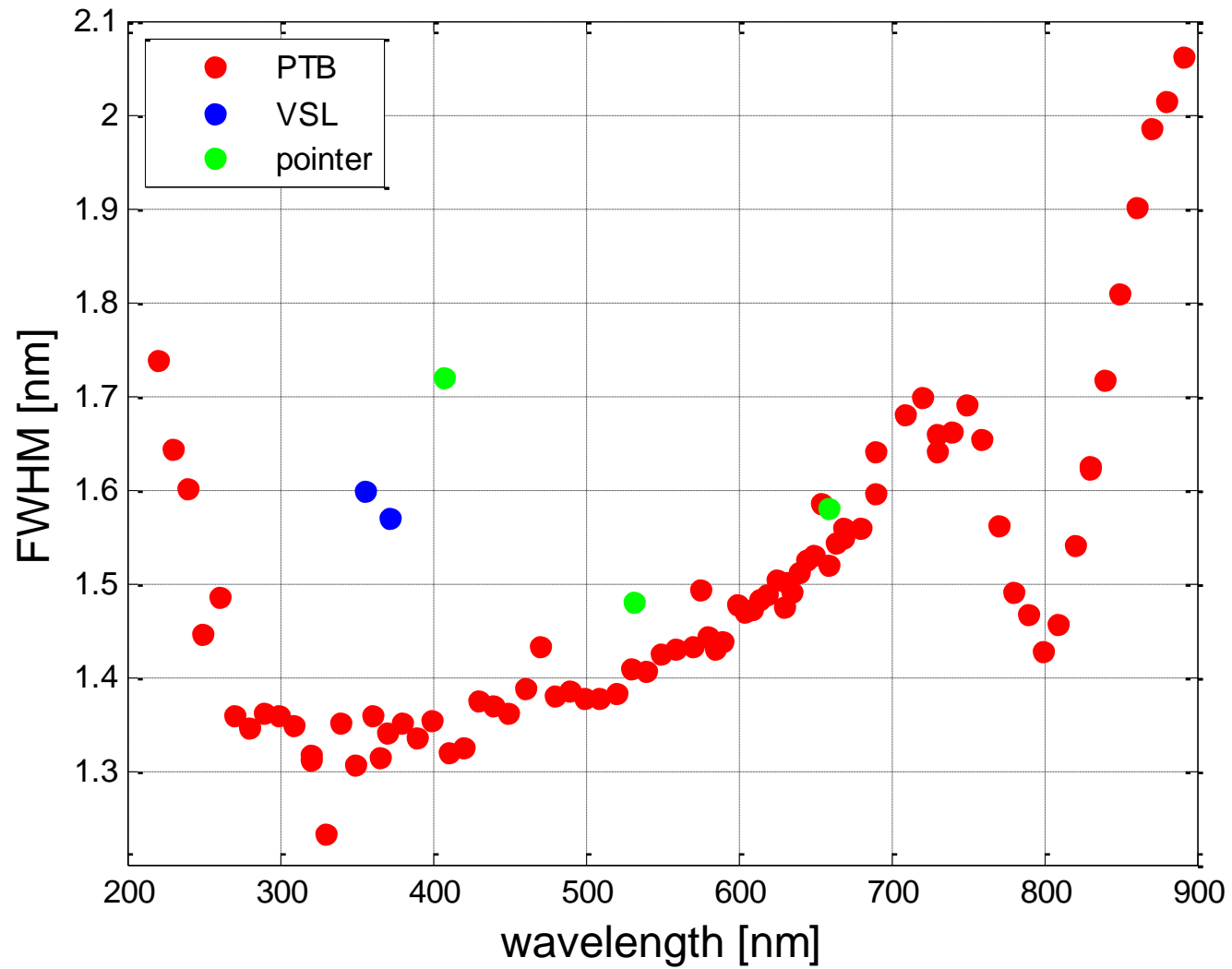
Bandwidth OO-USB4000



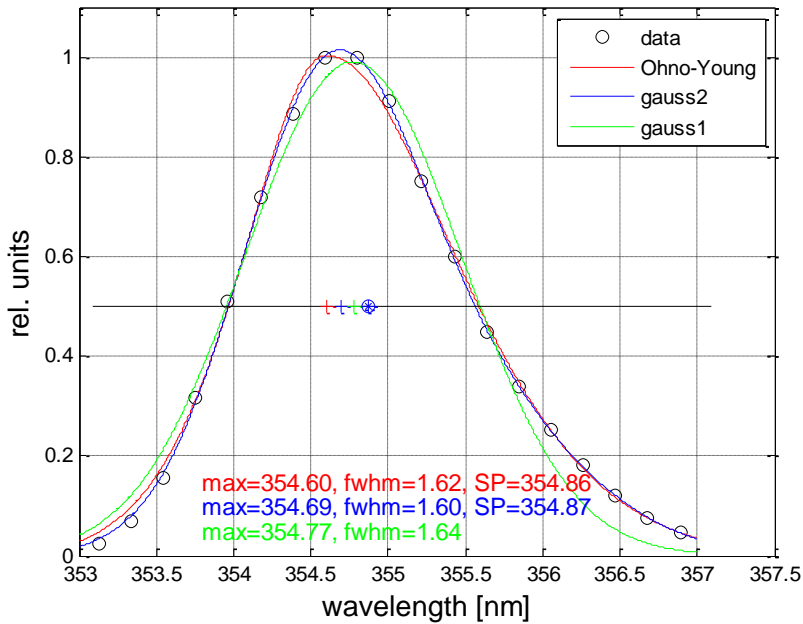
Bandwidth OO-USB4000



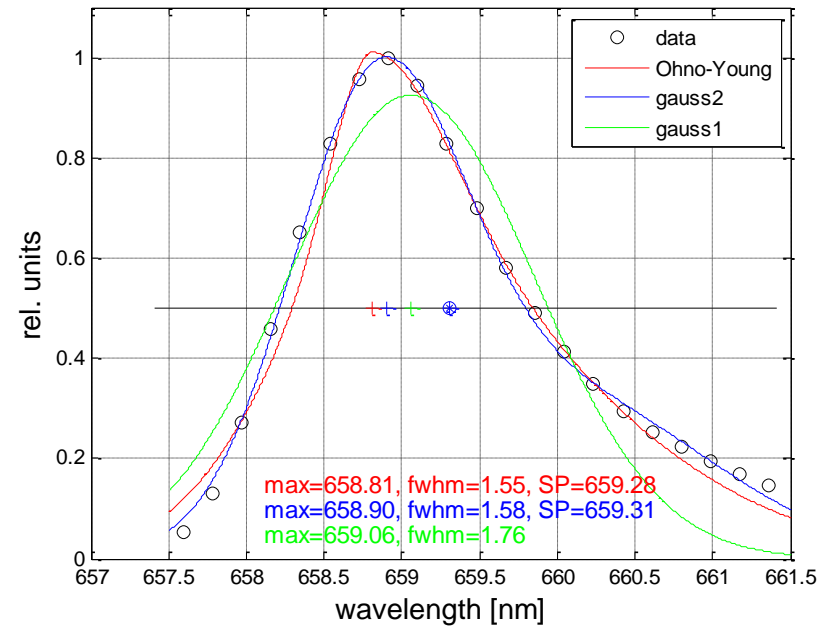
Bandwidth OO-USB4000



Bandwidth OO-USB4000



Bandwidth OO-USB4000

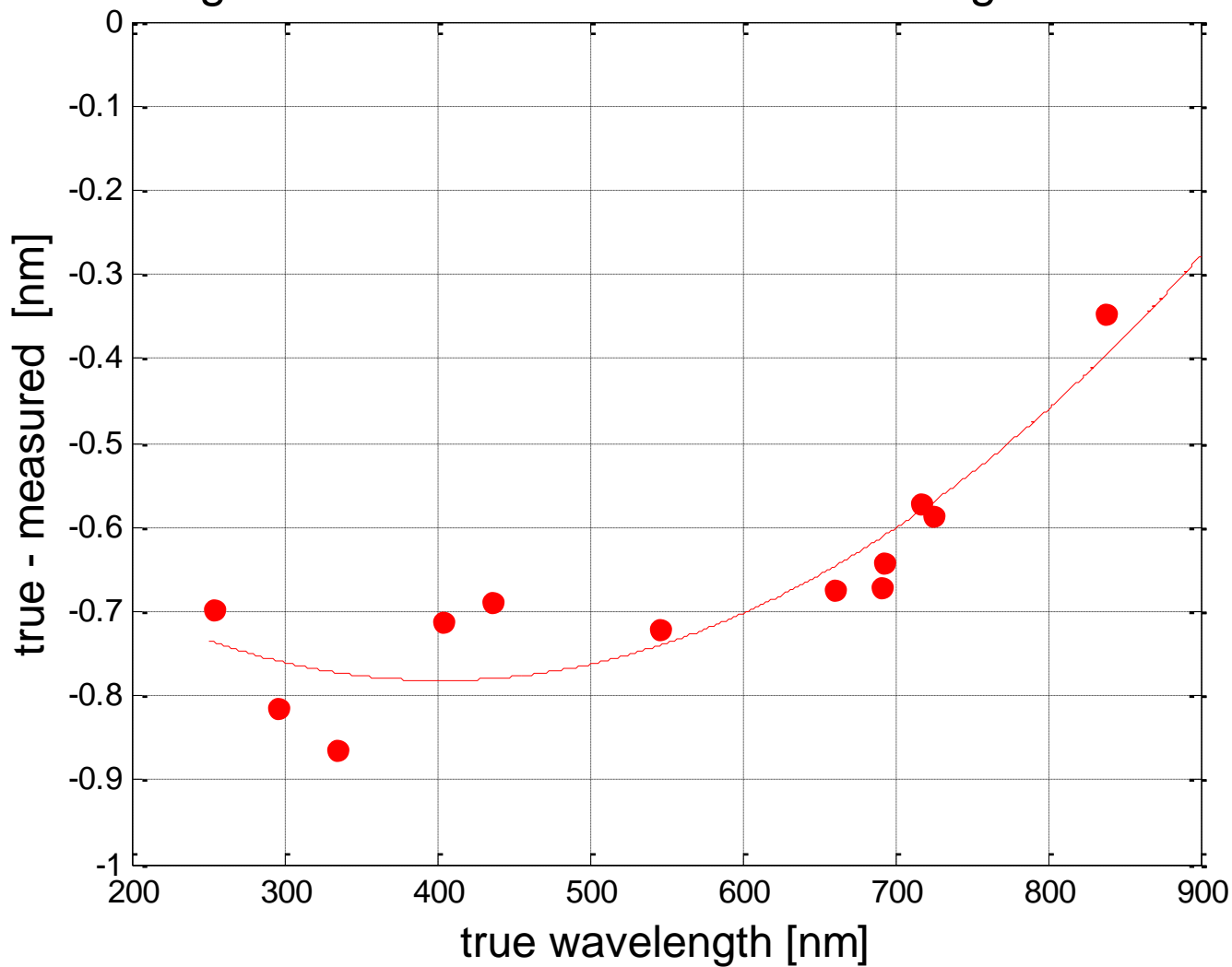


$$\text{Gauss1: } B = c1 * \exp\left(-\left(\frac{\lambda - c2}{c3}\right)^2\right)$$

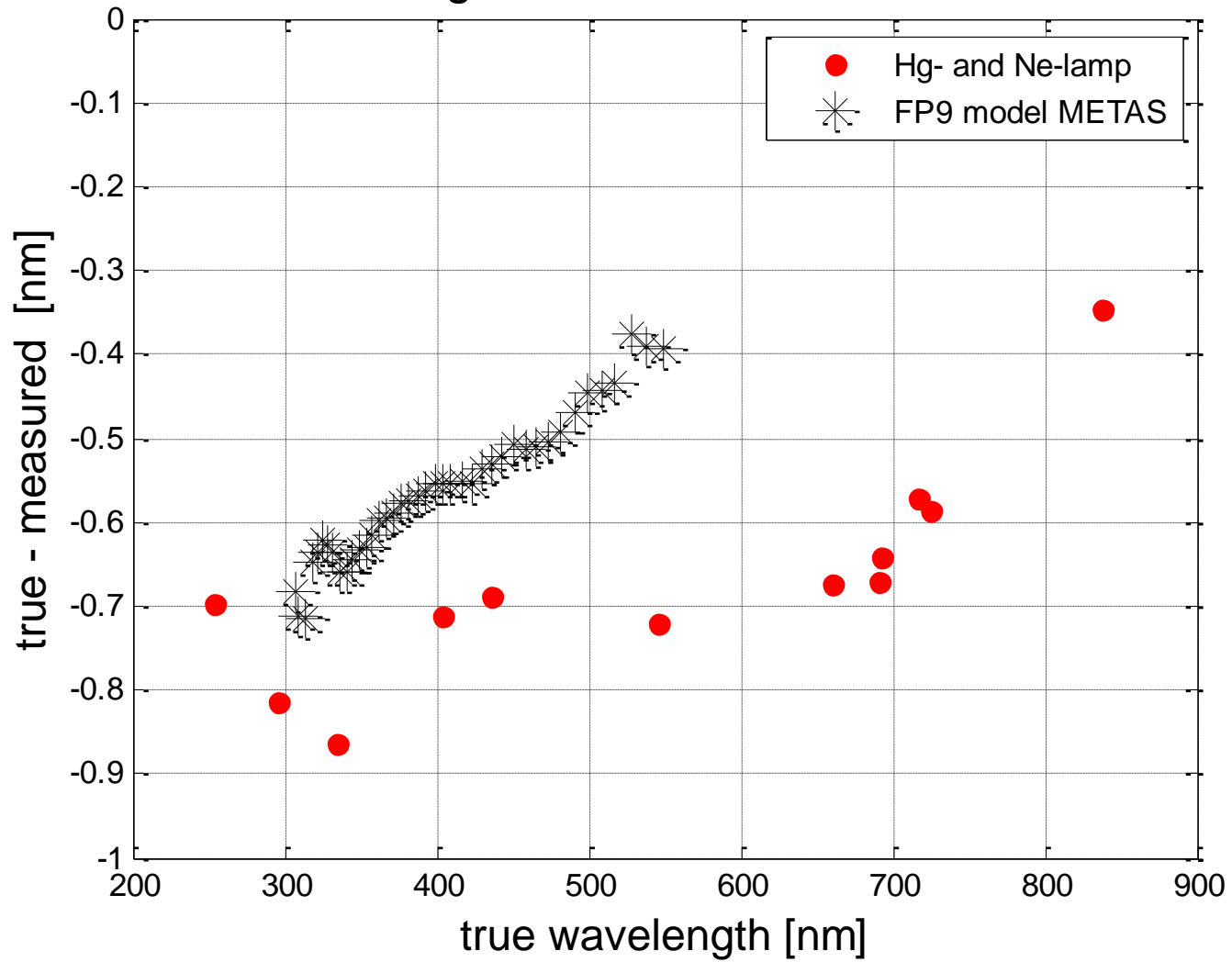
$$\text{Gauss2: } B = c1 * \exp\left(-\left(\frac{\lambda - c2}{c3}\right)^2\right) + c4 * \exp\left(-\left(\frac{\lambda - c5}{c6}\right)^2\right)$$

$$\text{Ohno-Young: } B = c1 * \exp\left(-\left(\frac{(\lambda_0 - \lambda) * k1}{k2}\right)^2\right) + 2 * \exp\left(-\left(\frac{\lambda_0 - \lambda}{k2}\right)^g\right)$$

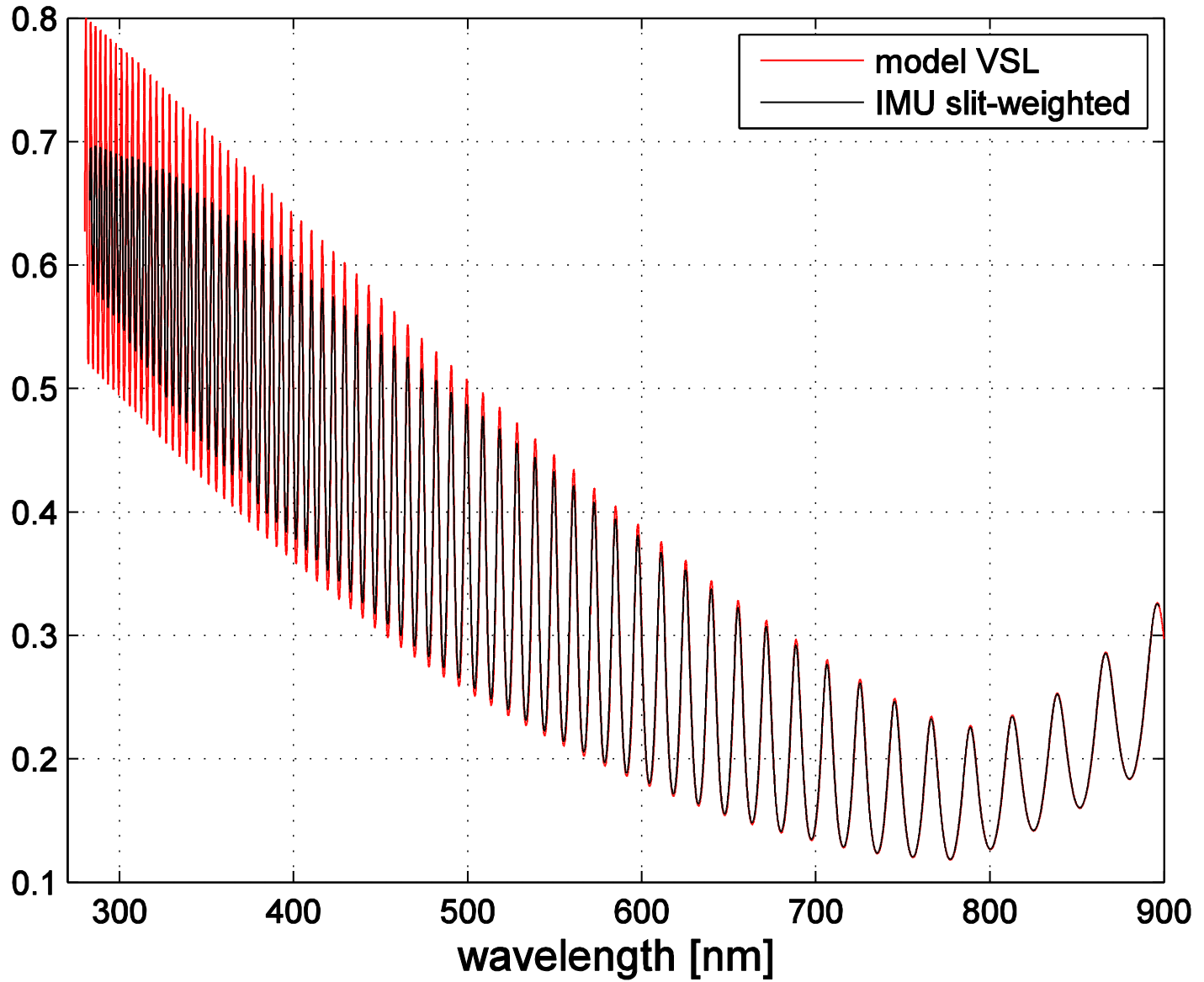
wavelength correction OO-USB4000 from Hg- and Ne-lamp



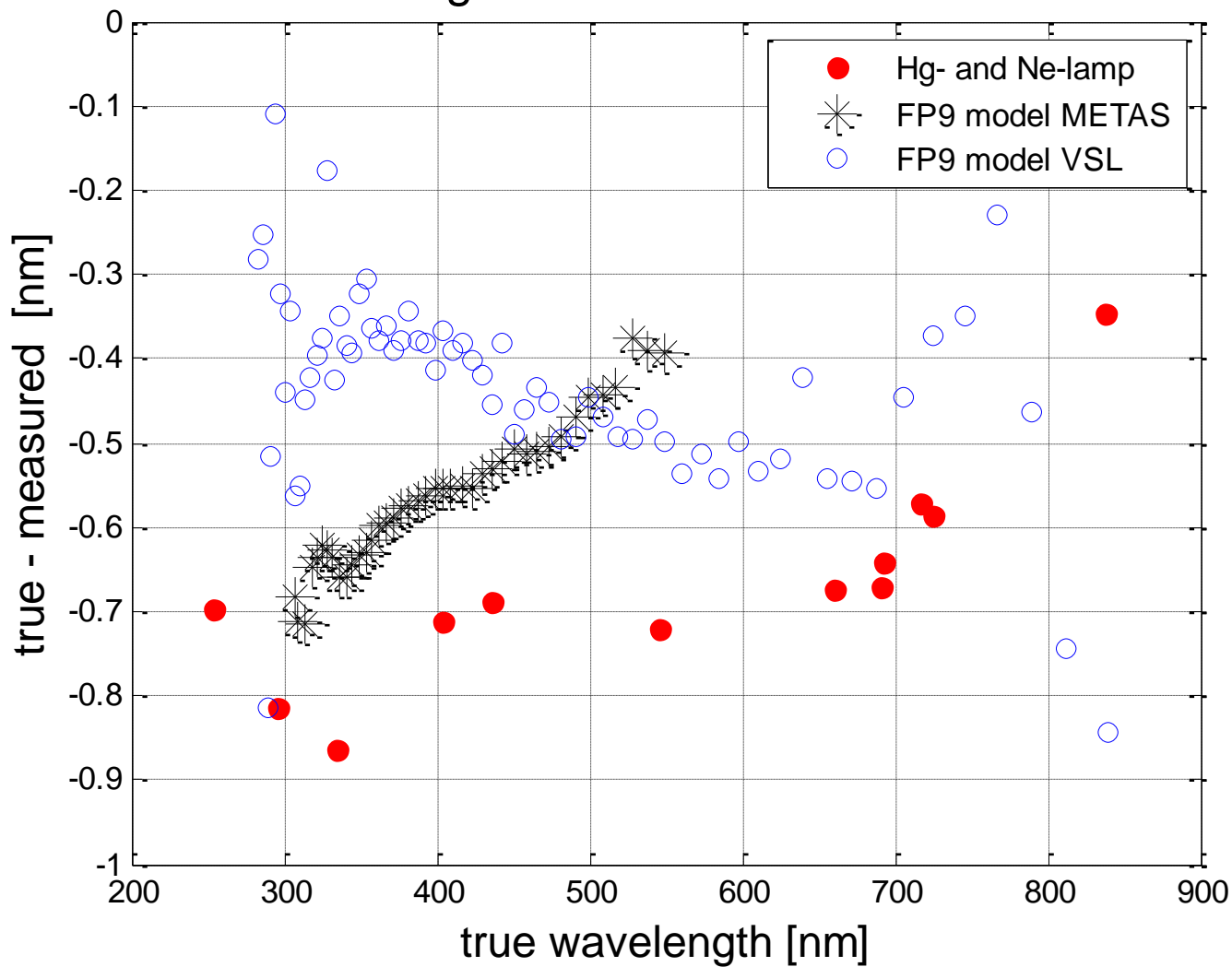
wavelength correction OO-USB4000



Transmission FP-9



wavelength correction OO-USB4000



Stray light correction

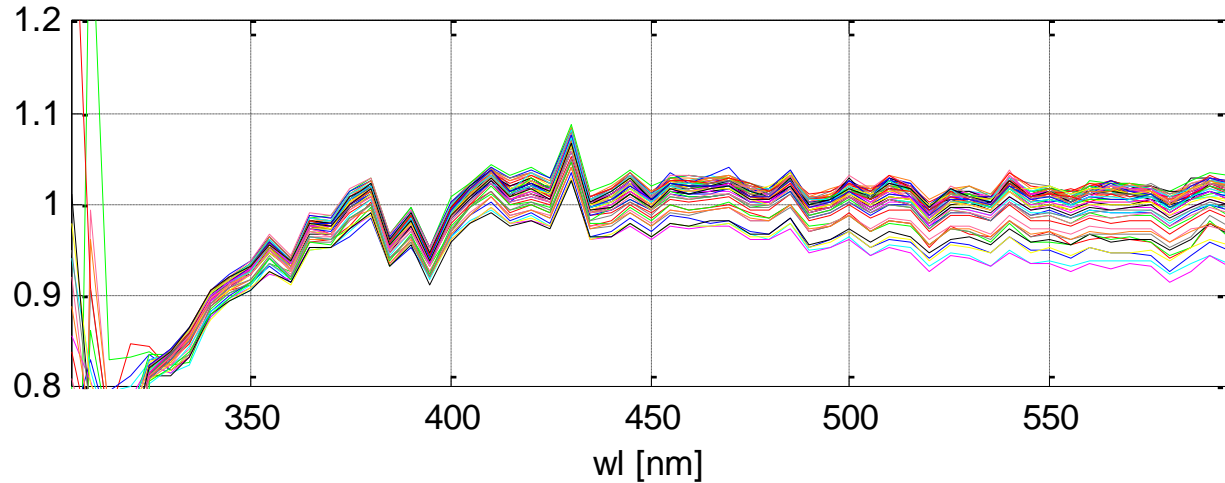
$$Y_{\text{meas}} = Y_{\text{IB}} + \text{SDF} * Y_{\text{IB}} \quad (\text{Zong et al., Appl Opt 2006})$$

$$Y_{\text{meas}} = Y_{\text{IB}} + \text{SDF} * Y_{\text{IB}} + \Delta$$

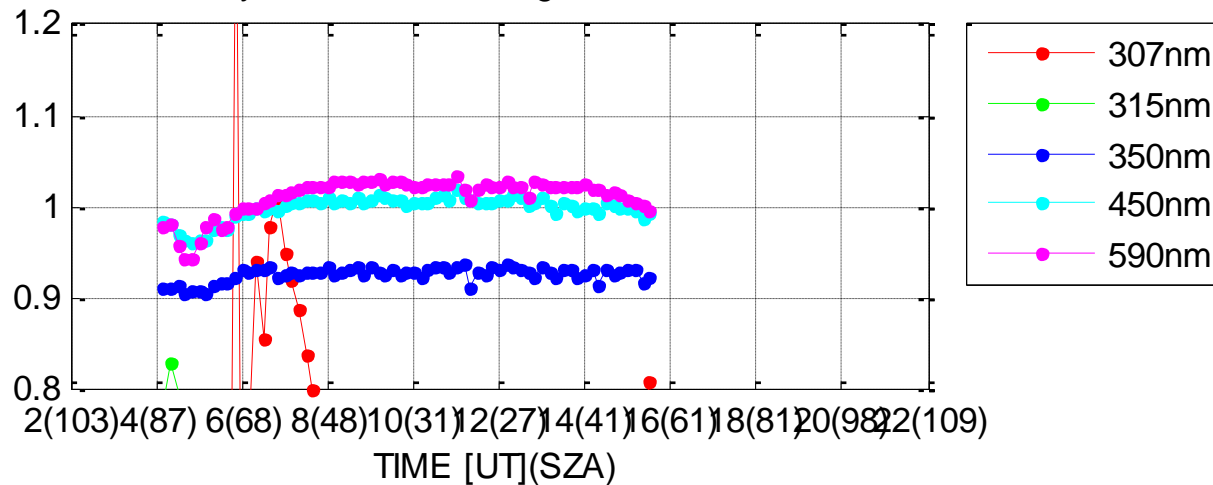
$$Y_{\text{IB}} = \text{SLM} * Y_{\text{meas}} - \text{ORM} * \text{ORSp}$$

SLM (PTB)

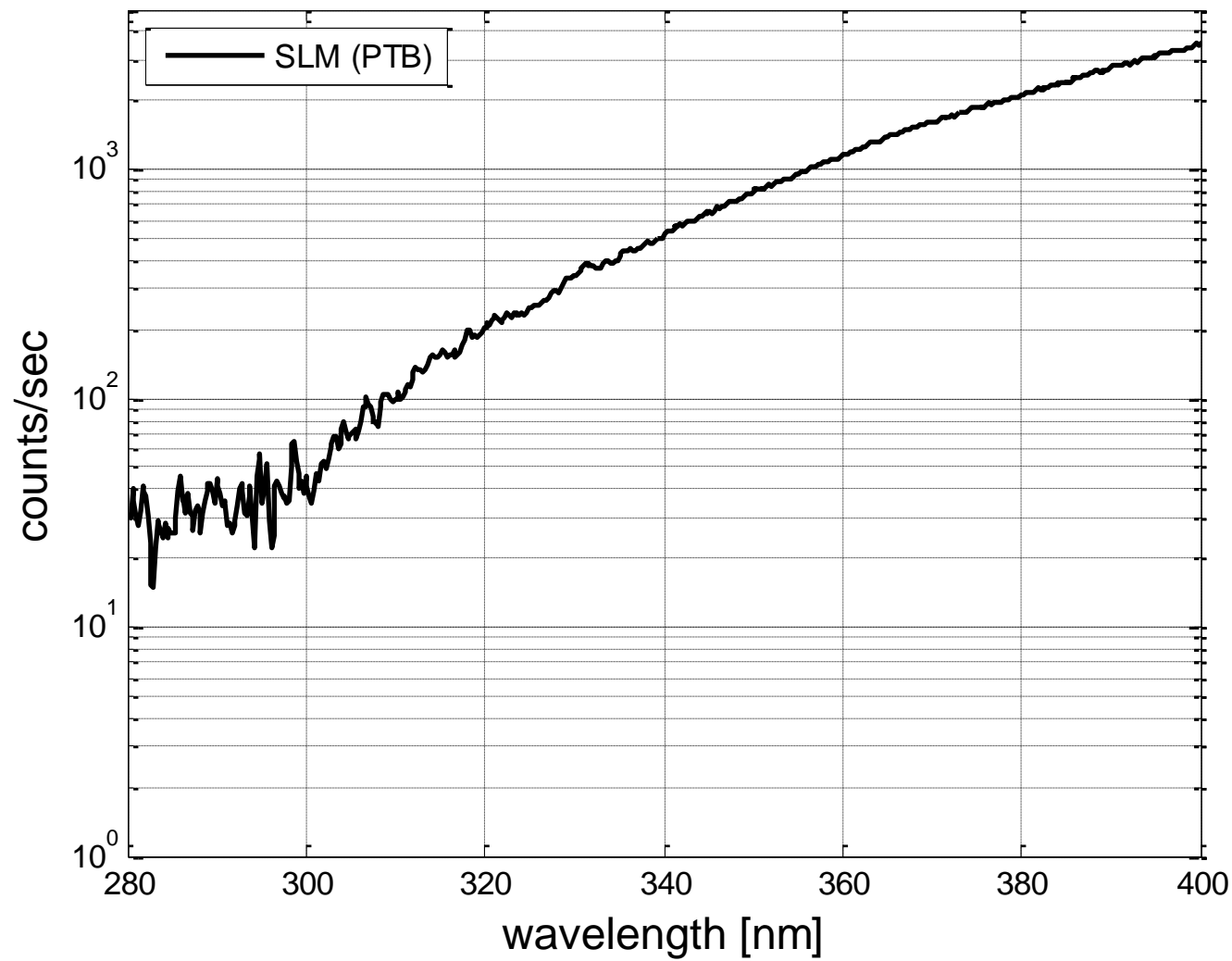
Global irradiance ratios ATO/ATI at Innsbruck:17-Jul-2013(198)



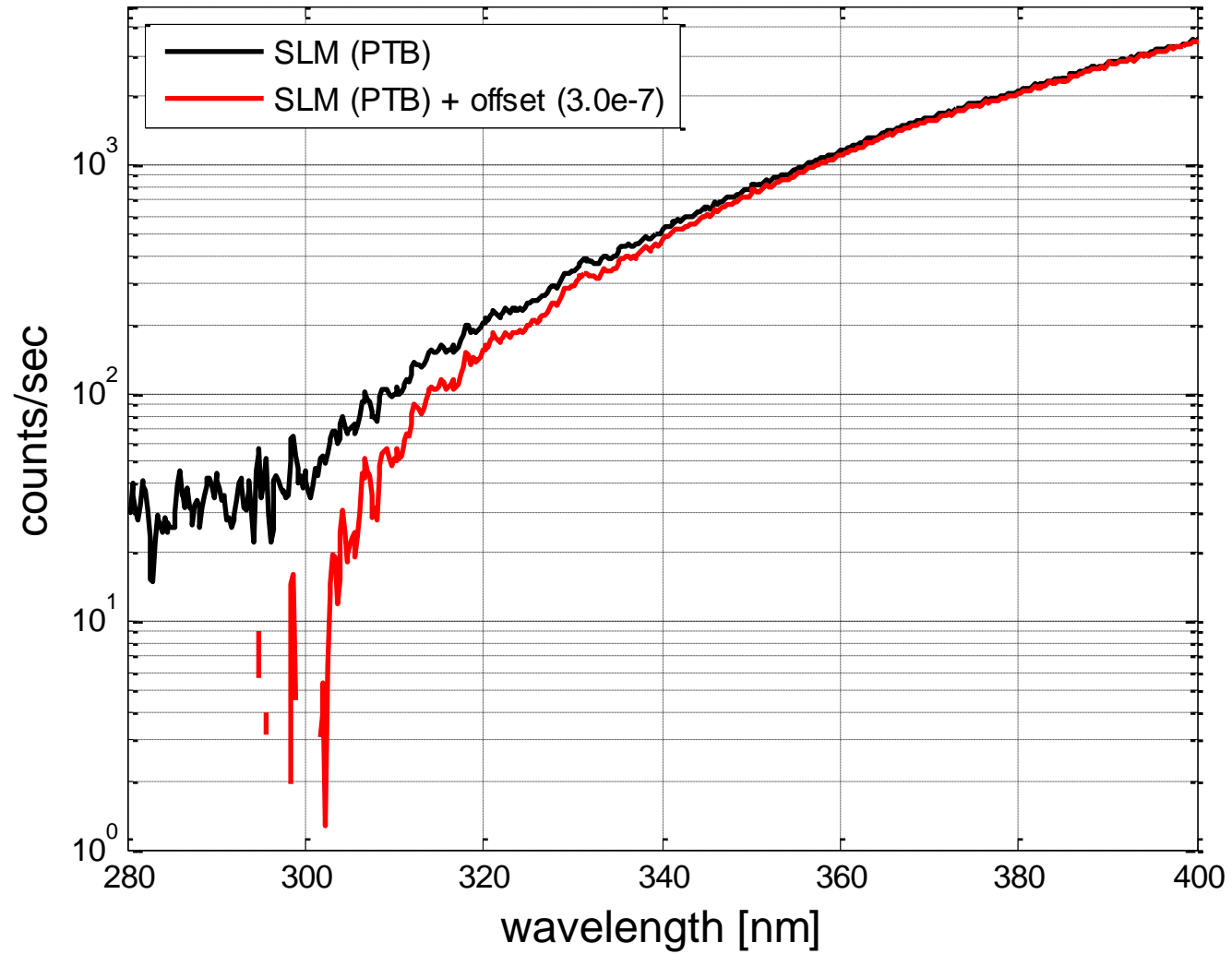
Daily variation, wavelength bands ± 2.5 nm



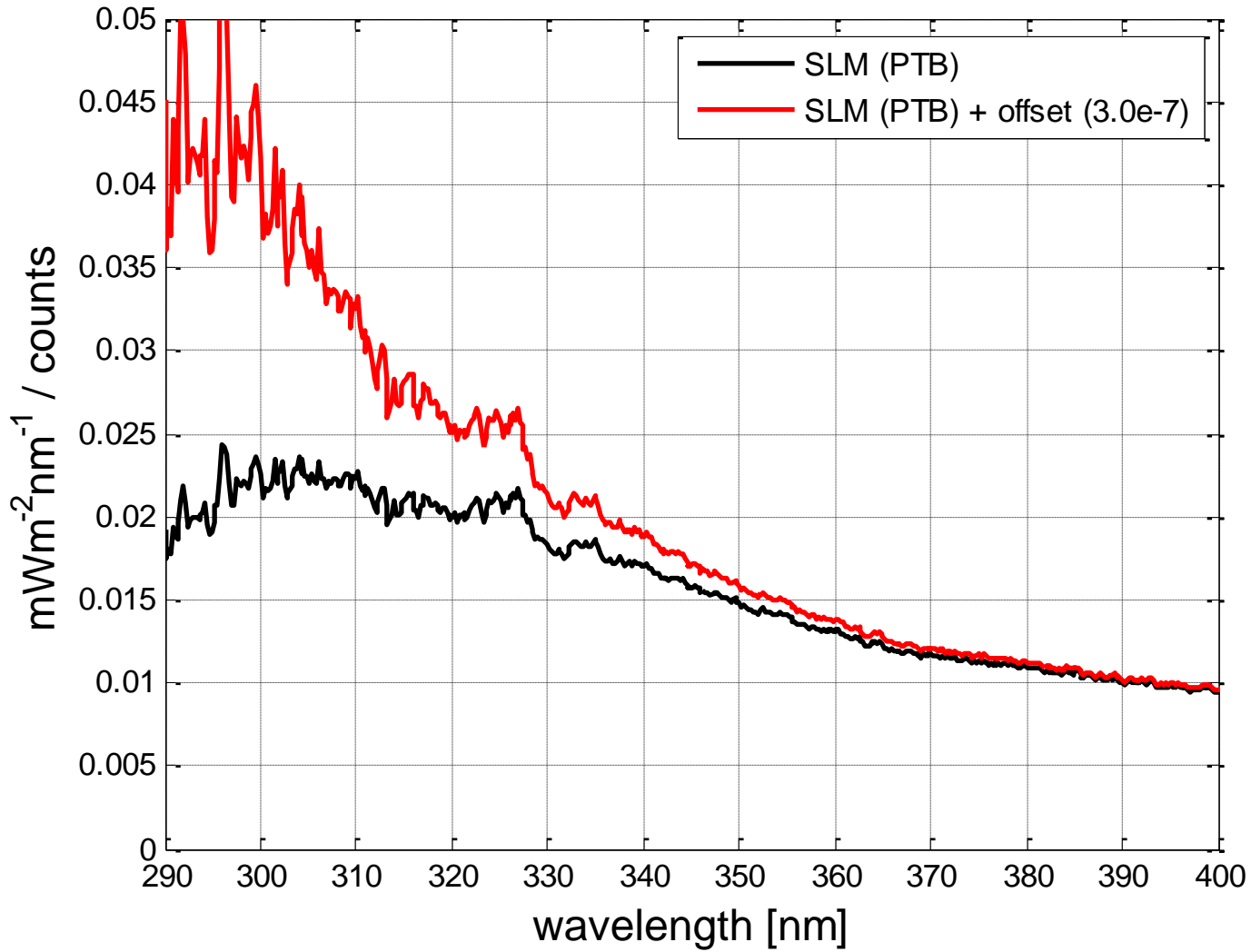
FEL + WG305



FEL + WG305

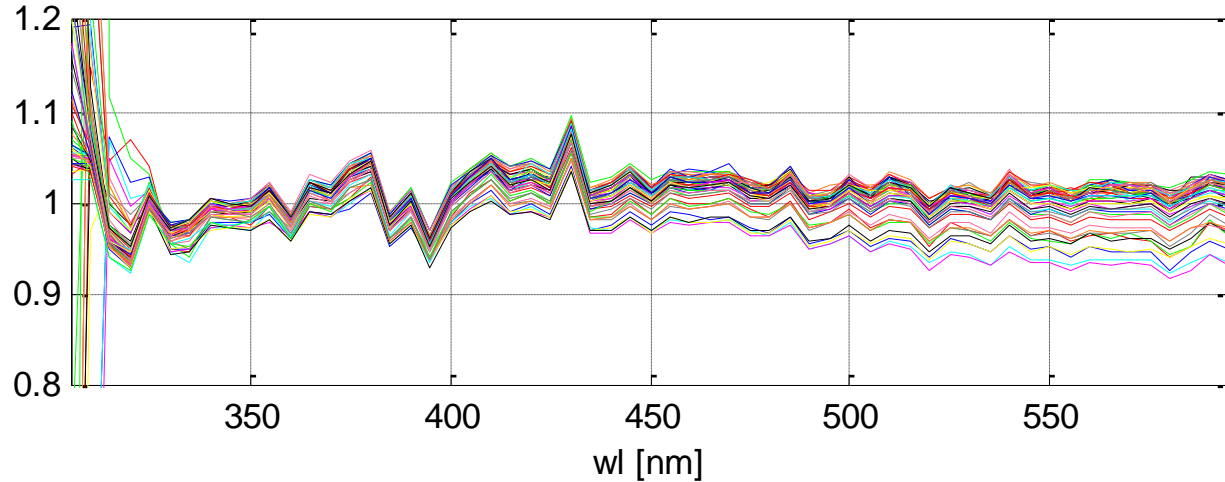


Calibration OO-USB4000

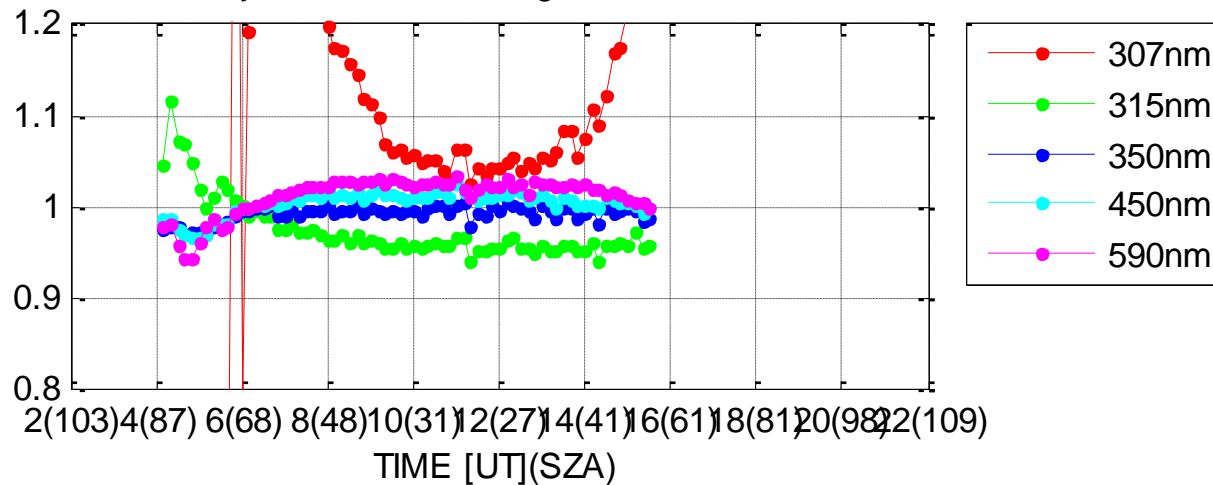


SLM (PTB) + offset (3.0e-7)

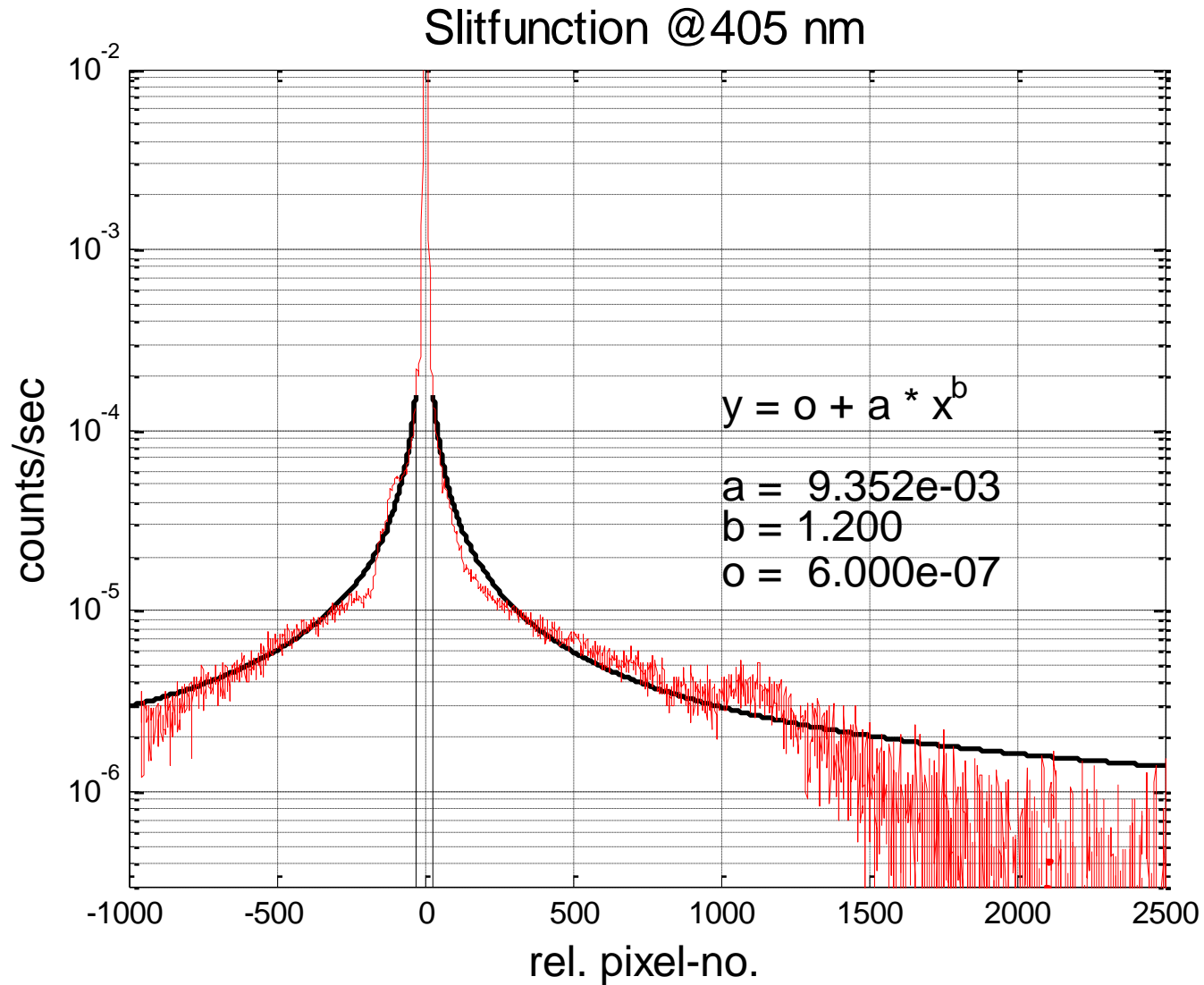
Global irradiance ratios ATO/ATI at Innsbruck:17-Jul-2013(198)



Daily variation, wavelength bands ± 2.5 nm



Simplified stray light correction



Results for Erythema

