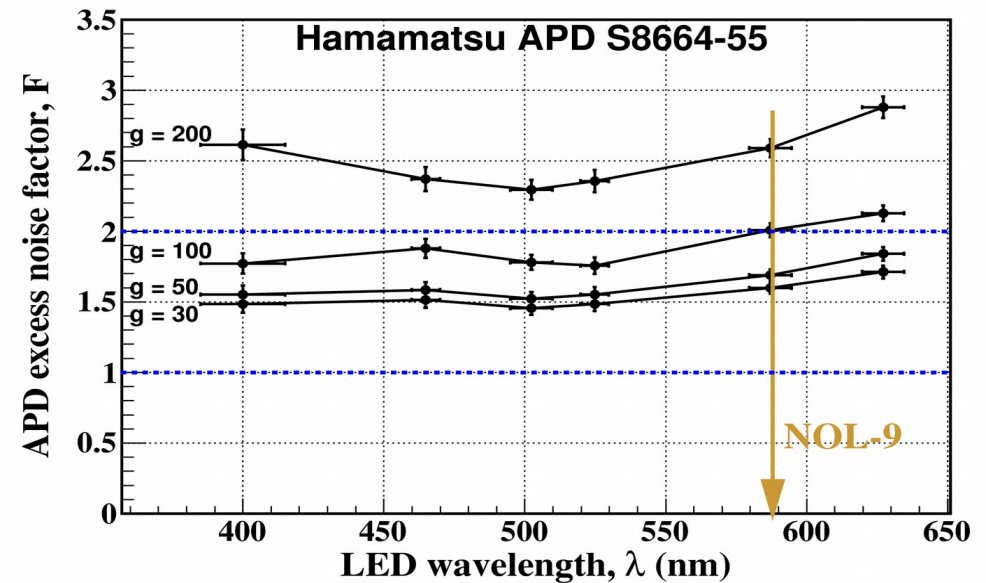
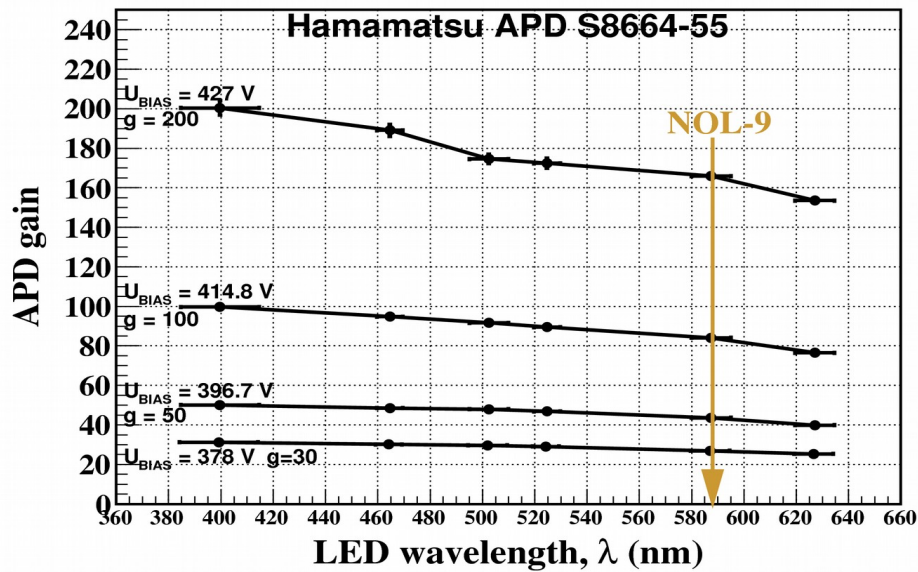


$$ENC_{light}^2(U_{BIAS}) = 2e\tau(I_{photo} + I_{dark}) \cdot g \cdot F \cdot K_{shaper} + ENC_{other}^2(U_{BIAS})$$

$$ENC_{dark}^2(U_{BIAS}) = 2e\tau I_{dark} \cdot g \cdot F \cdot K_{shaper} + ENC_{other}^2(U_{BIAS})$$

$$F(U_{BIAS}) = \frac{ENC_{light}^2(U_{BIAS}) - ENC_{dark}^2(U_{BIAS})}{2e\tau I_{photo}(U_{BIAS}) g(U_{BIAS}) K_{shaper}}$$

- ◆ $ENC_{other}(U_{BIAS})$ – thermal (\sim APD capacitance) + additional noise.
- ◆ e – positron charge;
- ◆ $K_{shaper} = 1.55 \pm 0.06$ – shape factor of ORTEC Amplifier 570;
- ◆ τ – shaping time;
- ◆ $I_{photo}(U_{BIAS})$ – photocurrent;
- ◆ $g(U_{BIAS})$ – APD gain;



For $\lambda = 588\text{ nm}$:

$$F(g=30) = 1.59 \pm 0.04$$

$$F(g=50) = 1.69 \pm 0.04$$

$$F(g=100) = 2.00 \pm 0.05$$

$$F(g=200) = 2.58 \pm 0.06$$