

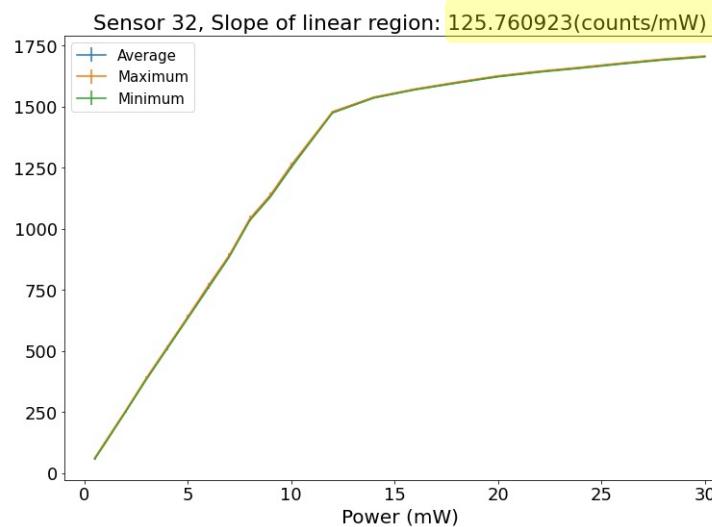
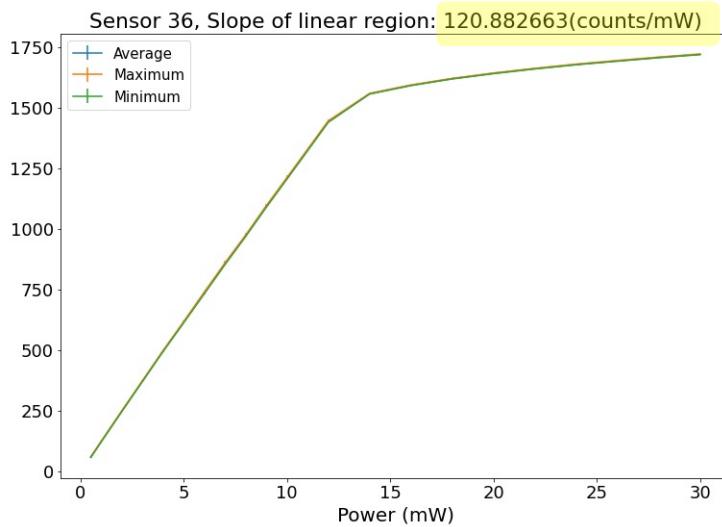
Virgo sensors absolute calibration



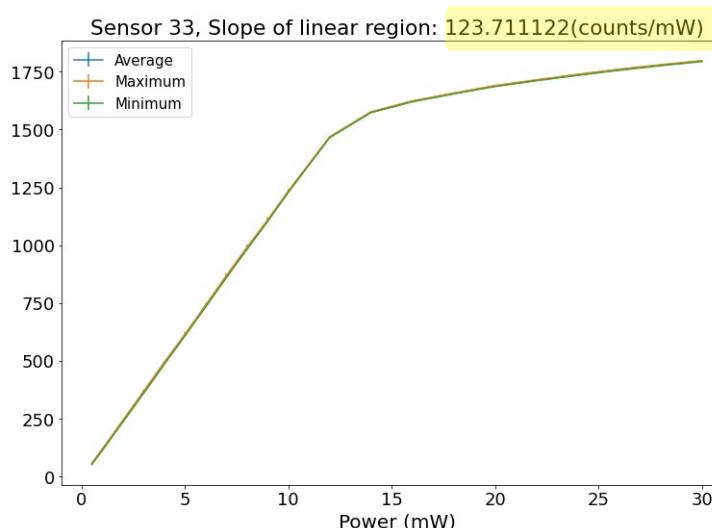
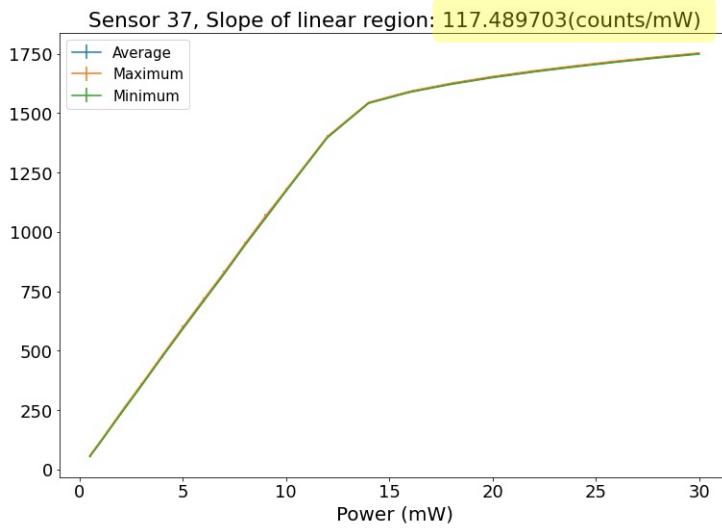
Lluïsa-Maria Mir, October 14, 2021



Virgo sensors

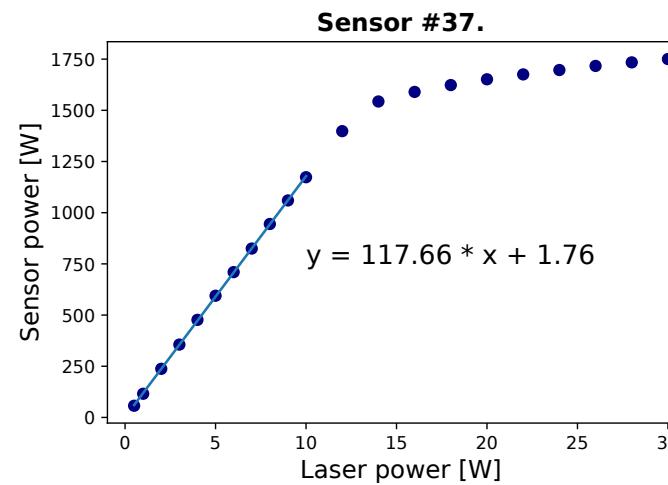
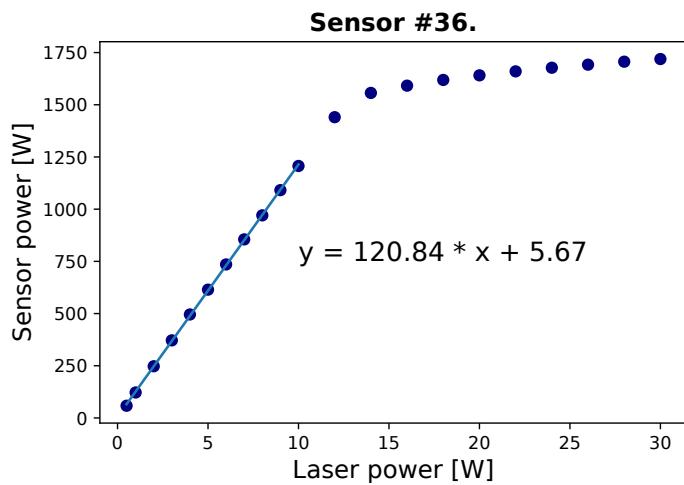
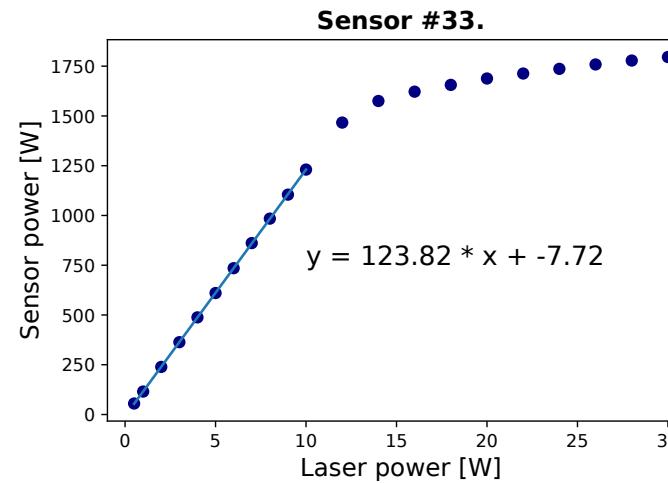
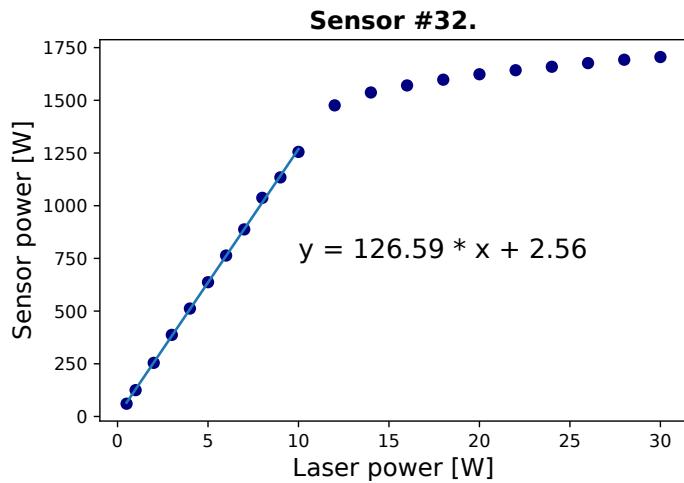


Mean: 121.96 counts/mW
STD: 3.11 counts/mW



Uncertainty from Virgo sensors is 2.6 %

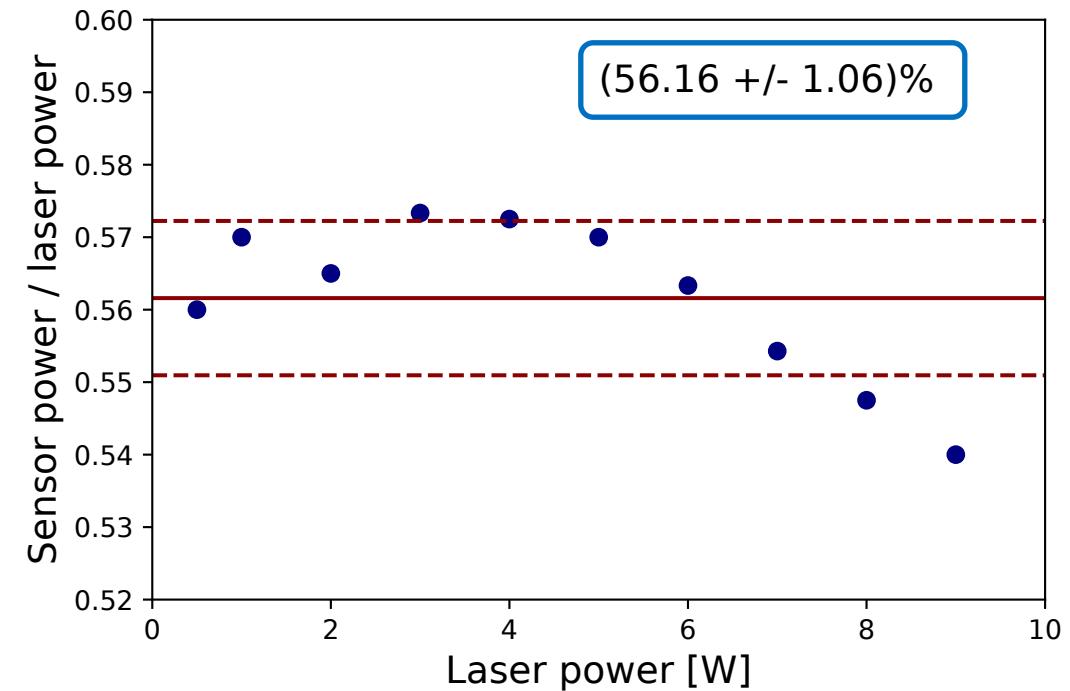
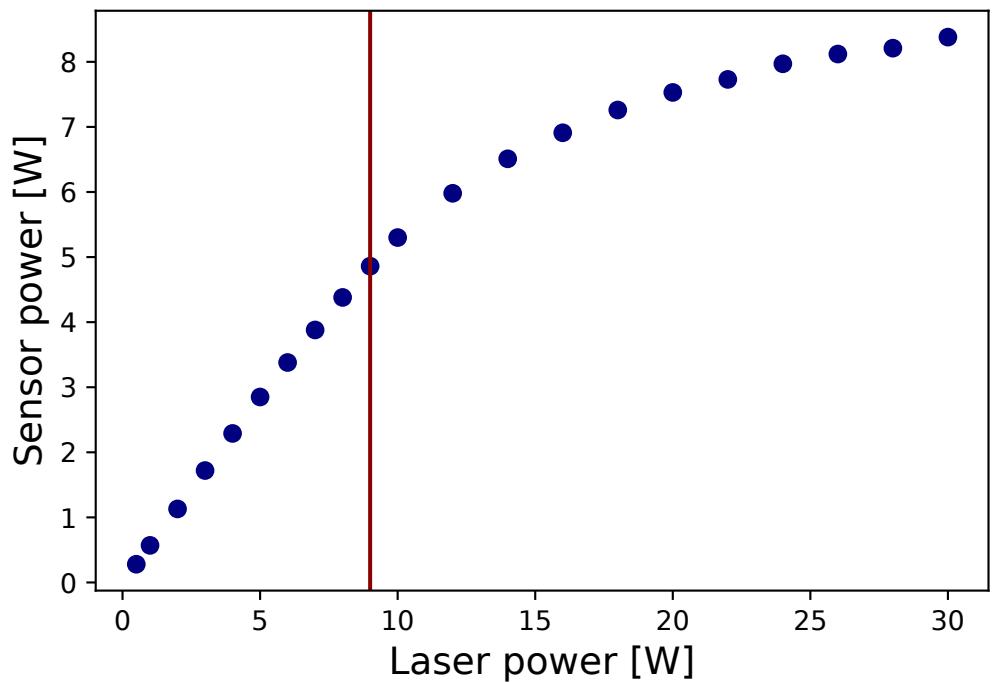
Virgo sensors



Mean: 122.23 counts/mW
STD: 3.73 counts/mW

Uncertainty from Virgo sensors is 2.7 %

Calibrated sensor



Uncertainty from calibrated sensor is 1.9 %

Absolute calibration

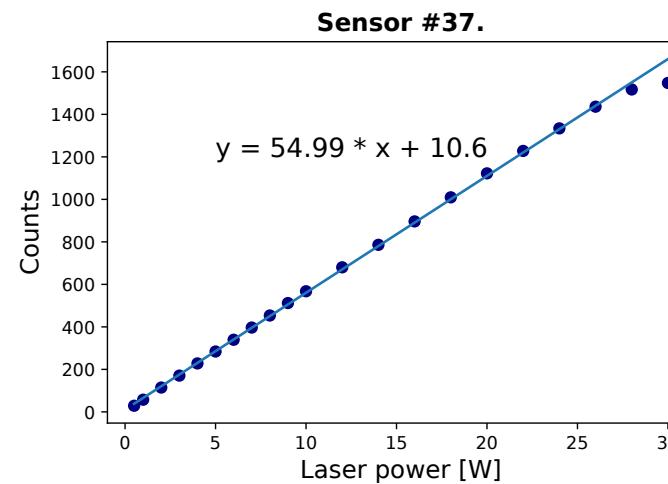
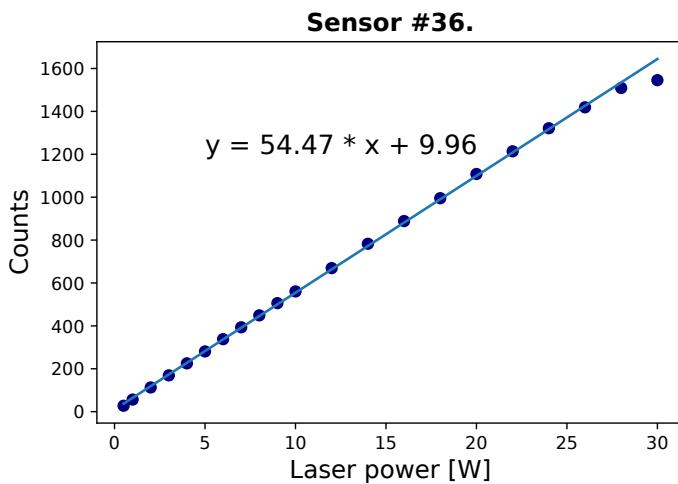
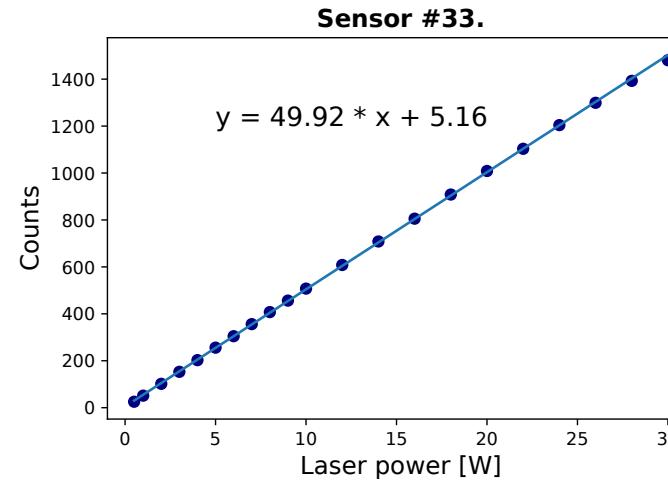
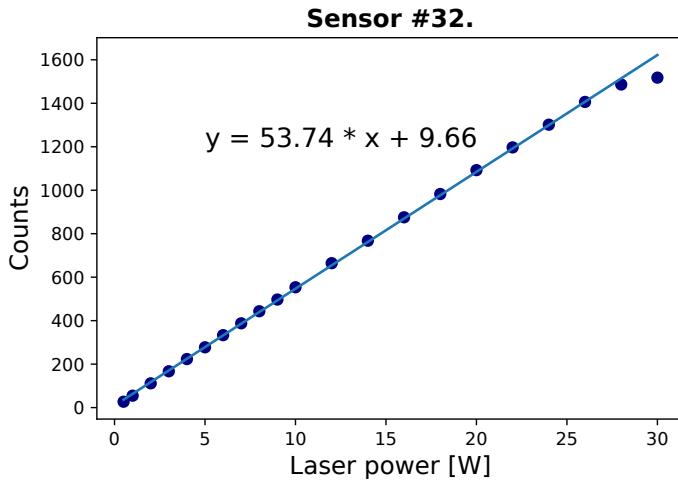
$$122.23 \text{ counts/mW} \Rightarrow 8.18 \mu\text{W/ count}$$

$$8.18 \mu\text{W/ count} \times 56.16 \% = 4.59 \mu\text{W/ count}$$

$$\text{Total uncertainty} = (2.7 \oplus 1.9) \% = 3.3 \%$$

$$\text{Calibration factor} = (4.60 \pm 0.15) \mu\text{W/ count}$$

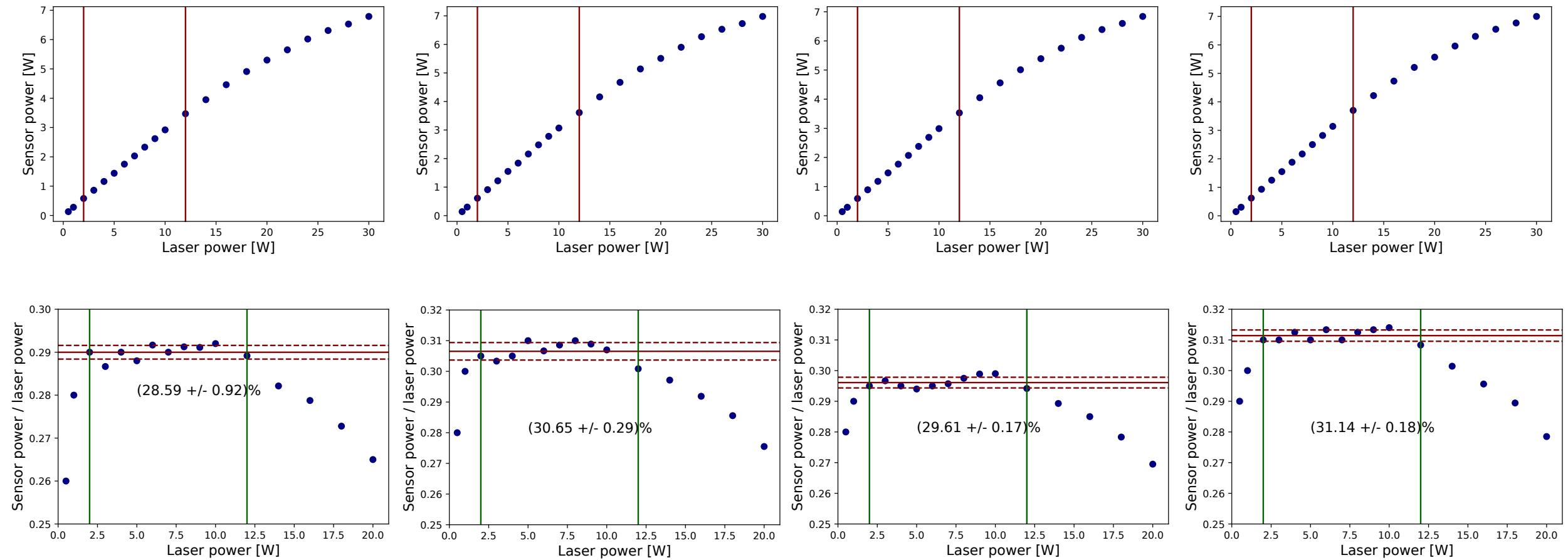
Virgo sensors with beam splitter



Mean: 53.28 counts/mW
STD: 1.99 counts/mW

Uncertainty from Virgo sensors is 3.7 %

Calibrated sensor with beam splitter



Uncertainty from calibrated sensor is 3.3 %

Absolute calibration with beam splitter

$$53.28 \text{ counts/mW} \Rightarrow 18.77 \mu\text{W/ count}$$

$$18.77 \mu\text{W/ count} \times 30.00 \% = 5.63 \mu\text{W/ count}$$

$$\text{Total uncertainty} = (3.7 \oplus 3.3) \% = 5.0 \%$$

$$\text{Calibration factor} = (5.63 \pm 0.28) \mu\text{W/ count}$$