Aufgabe 01.1.

$$c_0 = 299\ 792\ 458\ \text{m/s}$$
$$n = 1.000272$$
$$\Rightarrow v_K = c_0/n = 299\ 710\ 936.625\ \text{m/s}$$

mit $v = s/t$

(a) $t_1 = 5.00\,\text{ns} = 5 \times 10^{-9}\,\text{s}$

$$s_s = (c_0 - v_K) \cdot t_1 = 81521.375\,\text{m/s} \cdot 5 \times 10^{-9}\,\text{s}$$
$$= 4.07606875 \times 10^5 \times 10^{-9}\,\text{m}$$
$$\approx 4.08 \times 10^{-4}\,\text{m}.$$

(b) $t_2 = \dfrac{L}{v_K} - \dfrac{L}{c_0} = \dfrac{2145\,\text{m}}{299710936.625\,\text{m/s}} - \dfrac{2145\,\text{m}}{299792458\,\text{m/s}}$

$$= 7.1569 \times 10^{-6}\,\text{s} - 7.15495 \times 10^{-6}\,\text{s}$$
$$= 0.00195 \times 10^{-6}\,\text{s}$$
$$= 1.95 \times 10^{-9}\,\text{s}$$