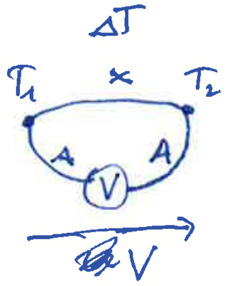
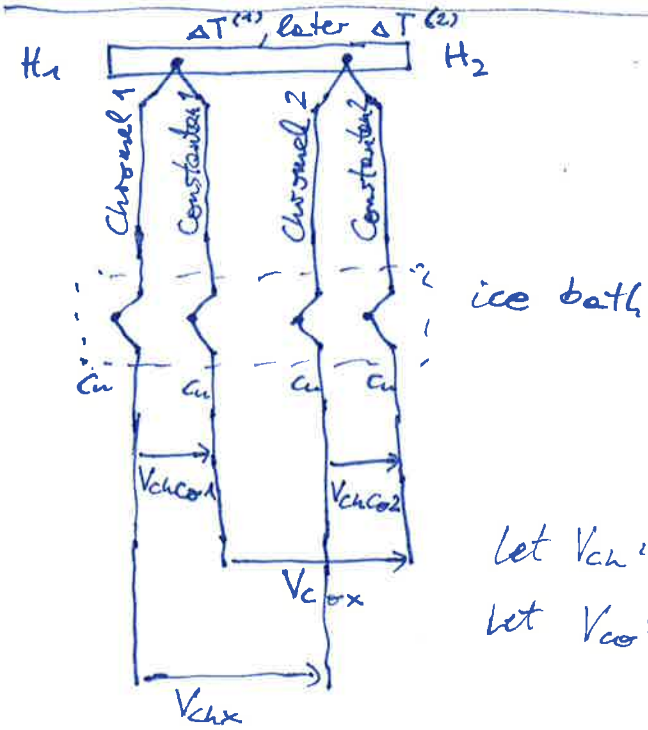
Danny

Jäckle – Thermospannung



$$V_{Ax} = (S_A - S_x)(T_2 - T_1) = \underbrace{(S_A - S_x)}_{S_{Ax} :=} \Delta T + V_{Noise}$$

$S_{Ax} :=$



Resel Seebeck

V_{chco1}, V_{chco2}: thermocouple

Let $S_{chx} := S_{ch} - S_x$

$$V_{chx}^{(1)} := S_{chx}\,\Delta T^{(1)}$$
$$V_{chx}^{(2)} := S_{chx}\,\Delta T^{(2)}$$
$$V_{cox}^{(1)} := S_{cox}\,\Delta T^{(1)}$$
$$V_{cox}^{(2)} := S_{cox}\,\Delta T^{(2)}$$

in

Let $V_{ch} := V_{chx}^{(1)} - V_{chx}^{(2)} = S_{chx}(\Delta T^{(1)} - \Delta T^{(2)})$

Let $V_{co} := V_{cox}^{(1)} - V_{cox}^{(2)} = S_{cox}(\Delta T^{(1)} - \Delta T^{(2)})$

~~$V_{ch} - V_{co} =$~~

$$\frac{V_{ch}}{S_{chx}} = \frac{V_{co}}{S_{cox}} = \Delta T^{(1)} - \Delta T^{(2)}$$

$$\frac{V_{ch}}{V_{co}} = \frac{S_{chx}}{S_{co}} = \frac{S_{ch} - S_x}{S_{co} - S_x} = \frac{S_{ch} - S_{co} + S_{co} - S_x}{S_{co} - S_x}$$

$$\frac{V_{ch}}{V_{co}} = \frac{S_{ch} - S_{co}}{S_{co} - S_x} + 1$$

$$\frac{V_{ch}}{V_{co}} - 1 = \frac{S_{ch} - S_{co}}{S_{co} - S_x}$$

$$\frac{V_{ch} - V_{co}}{V_{co}} = \frac{S_{ch} - S_{co}}{S_{co} - S_x}$$

$$\frac{S_{co} - S_x}{S_{ch} - S_{co}} = \frac{V_{co}}{V_{ch} - V_{co}}$$

$$S_{co} - S_x = (S_{ch} - S_{co})\frac{V_{co}}{V_{ch} - V_{co}}$$

$$\boxed{S_{co} - (S_{ch} - S_{co})\frac{V_{co}}{V_{ch} - V_{co}} = S_x} \quad ?$$

$$\frac{V_{co}}{V_{ch}} = \frac{S_{cox}}{S_{chx}} = \frac{S_{co} - S_x}{S_{ch} - S_x} = \frac{S_{co} - S_{ch} + S_{ch} - S_x}{S_{ch} - S_x}$$

$$\frac{V_{co}}{V_{ch}} = \frac{S_{co} - S_{ch}}{S_{ch} - S_x} + 1$$

$$\frac{V_{co} - V_{ch}}{V_{ch}} = \frac{S_{co} - S_{ch}}{S_{ch} - S_x}$$

$$\frac{V_{ch}}{V_{co} - V_{ch}} = \frac{S_{ch} - S_x}{S_{co} - S_{ch}} = \frac{S_{ch}}{S_{co} - S_{ch}} - \frac{S_x}{S_{co} - S_{ch}}$$

$$\frac{V_{ch}}{V_{co} - V_{ch}} - \frac{S_{ch}}{S_{co} - S_{ch}} = -\frac{S_x}{S_{co} - S_{ch}}$$

$$\boxed{S_{ch} - \frac{V_{ch}}{V_{co} - V_{ch}}(S_{co} - S_{ch}) = S_x}$$

$$\boxed{S_{ch} - \frac{V_{ch}}{V_{ch} - V_{co}}(S_{ch} - S_{co}) = S_x}$$

OK?

~~Directly~~ Symm.:

$$\boxed{S_x = \frac{S_{co} V_{ch} - S_{ch} V_{co}}{V_{ch} - V_{co}}}$$