Electronics
Resistive Sensors

Terry Sturtevant

Wilfrid Laurier University

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Introduction to transducers

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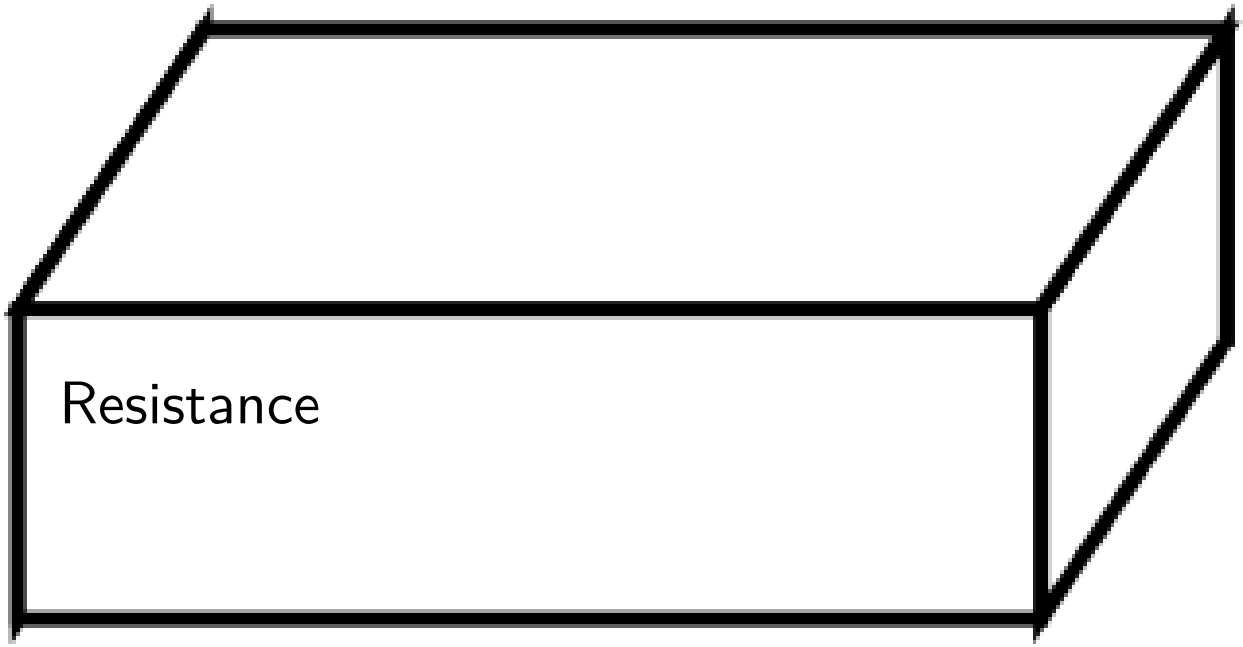
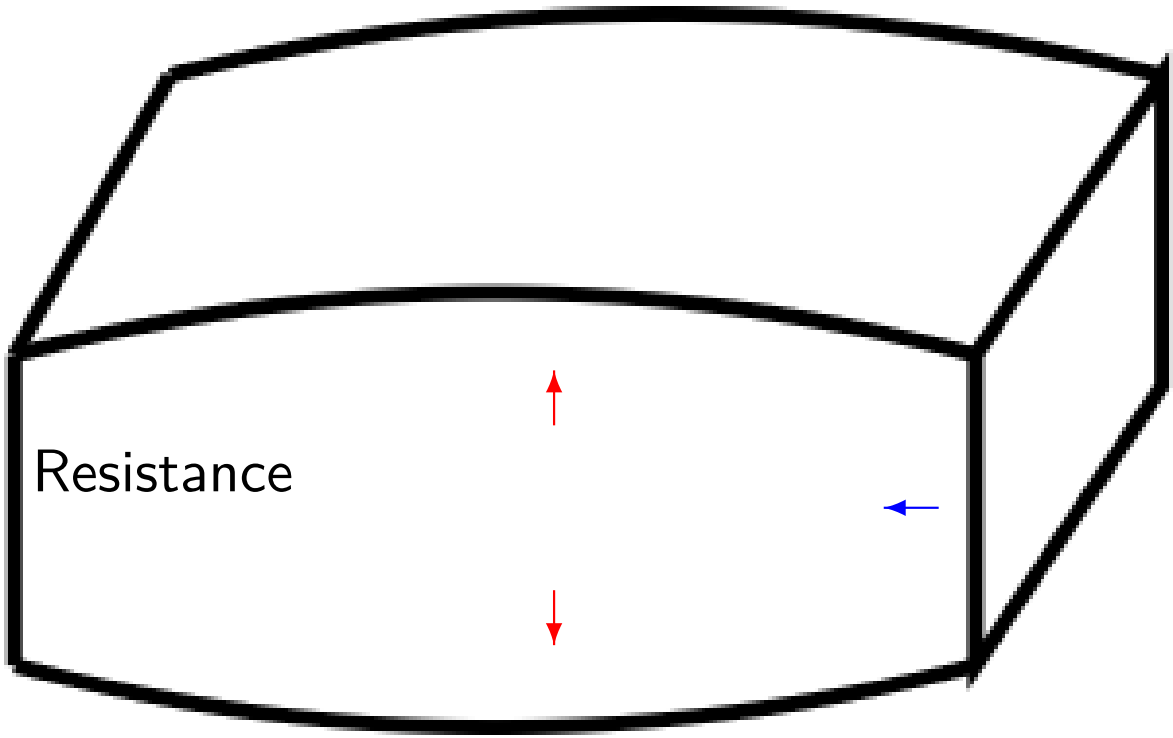
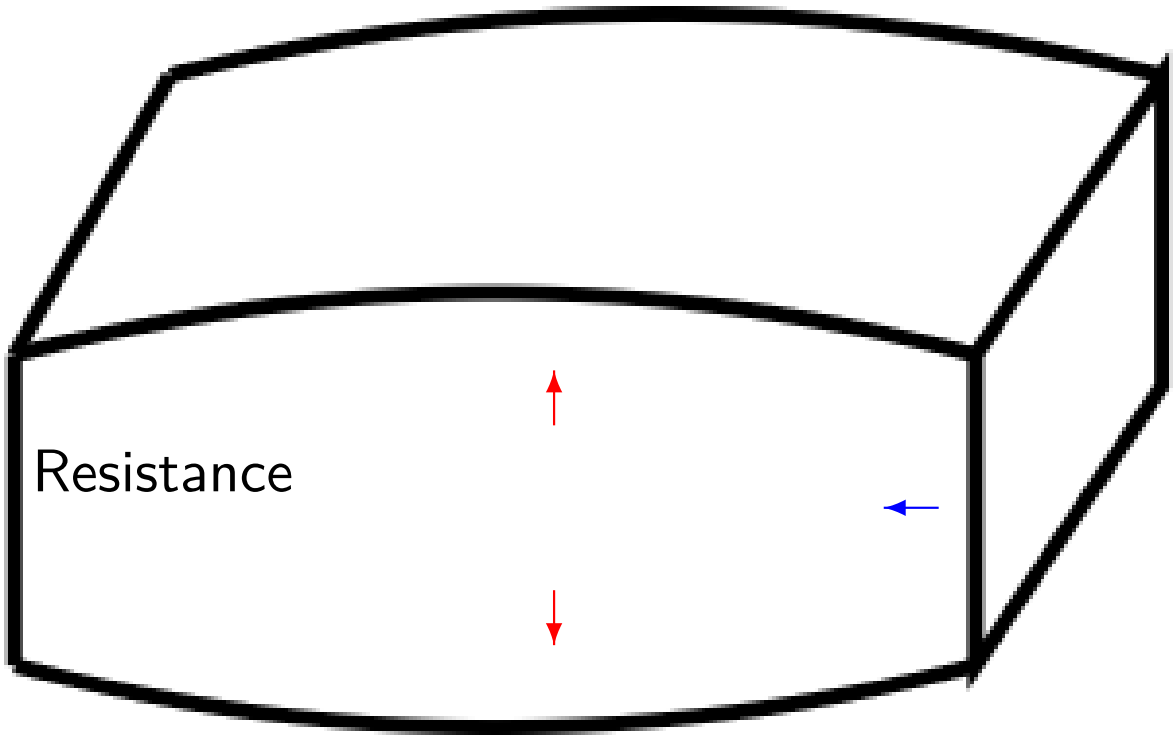
Here's an example of how a strain gauge works.

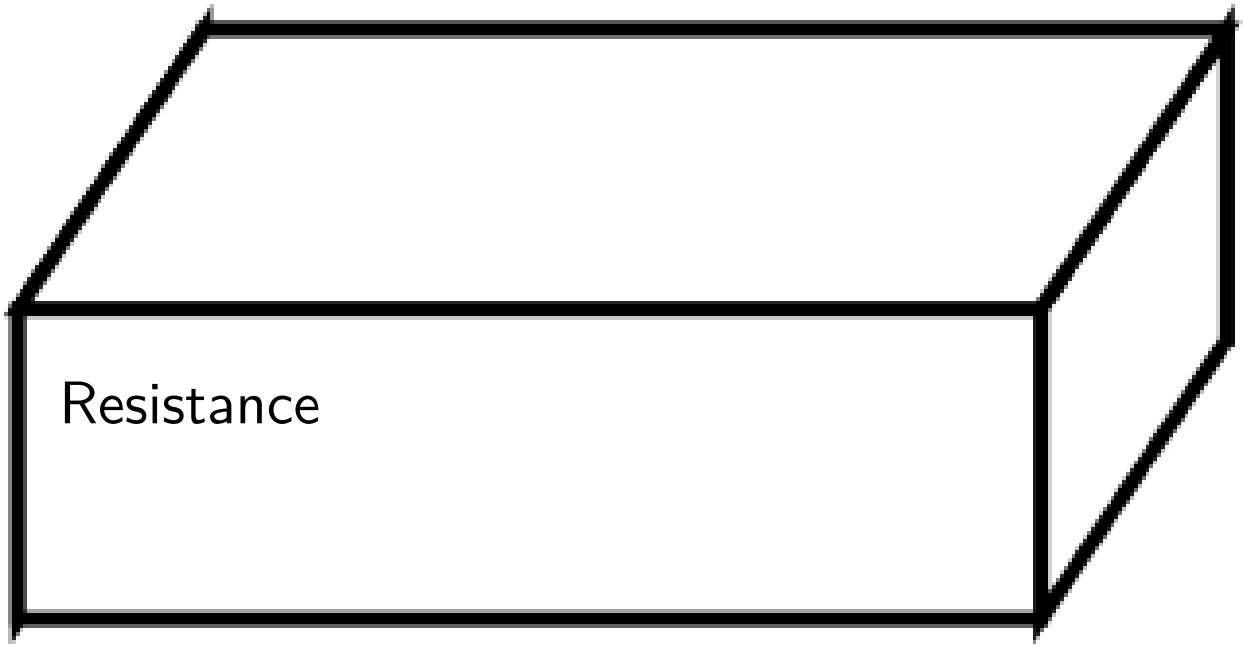


$$R = \rho \frac{L}{A}$$


Resistance



$$R' = \rho \frac{(L - \Delta L)}{(A + \Delta A)} < R$$



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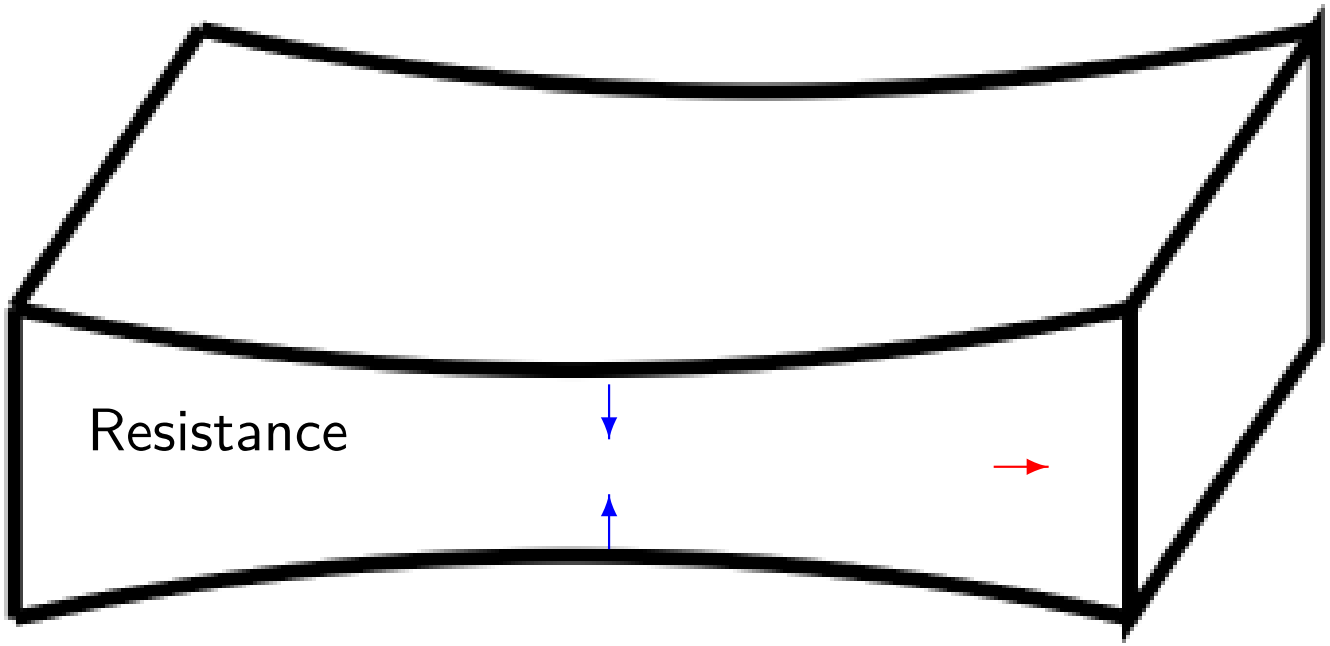
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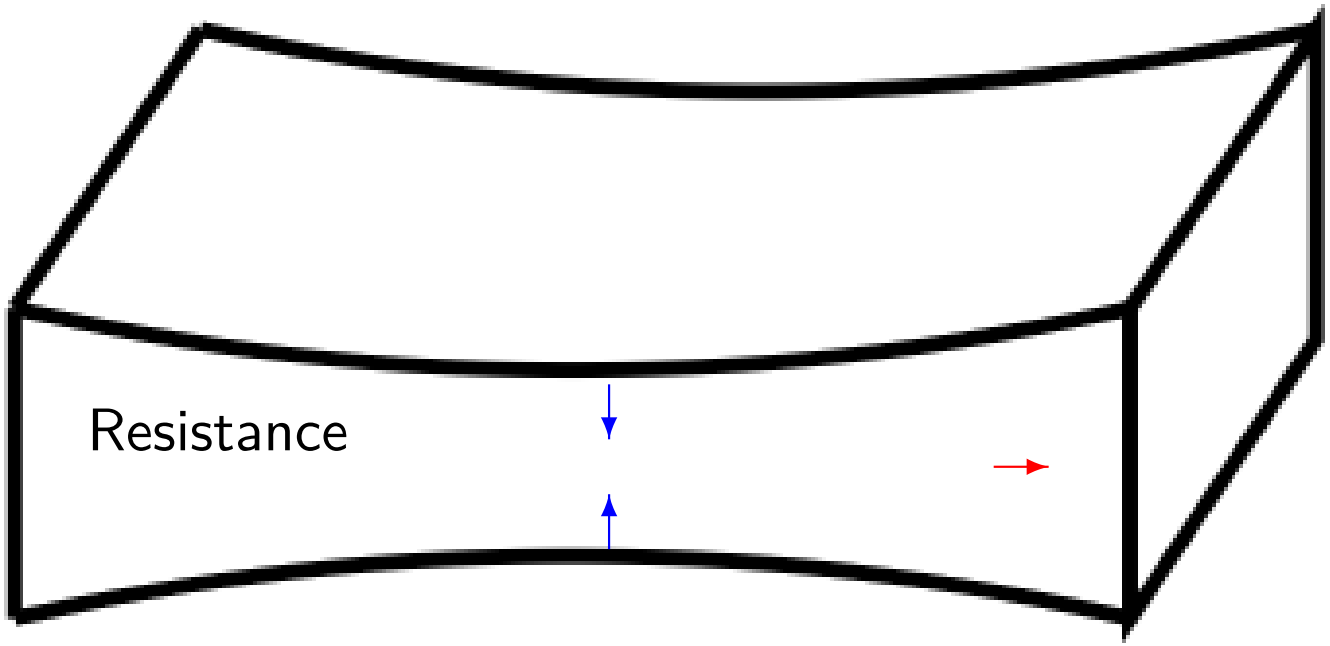

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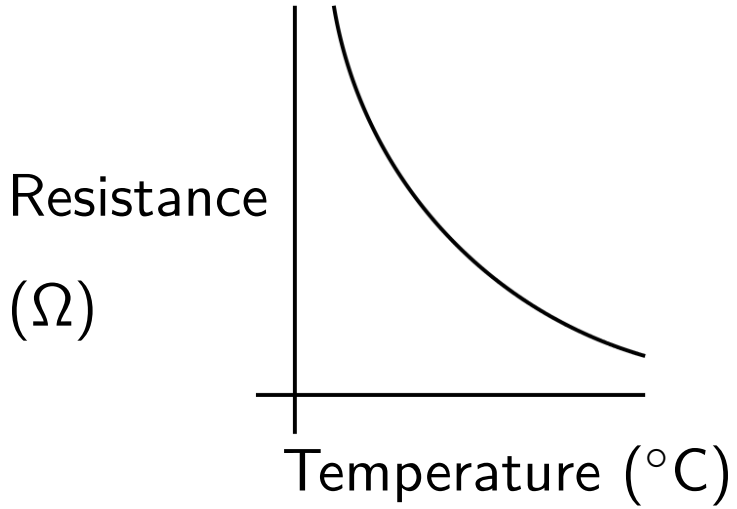
Thermistors



This is the resistance/temperature curve for a thermistor.

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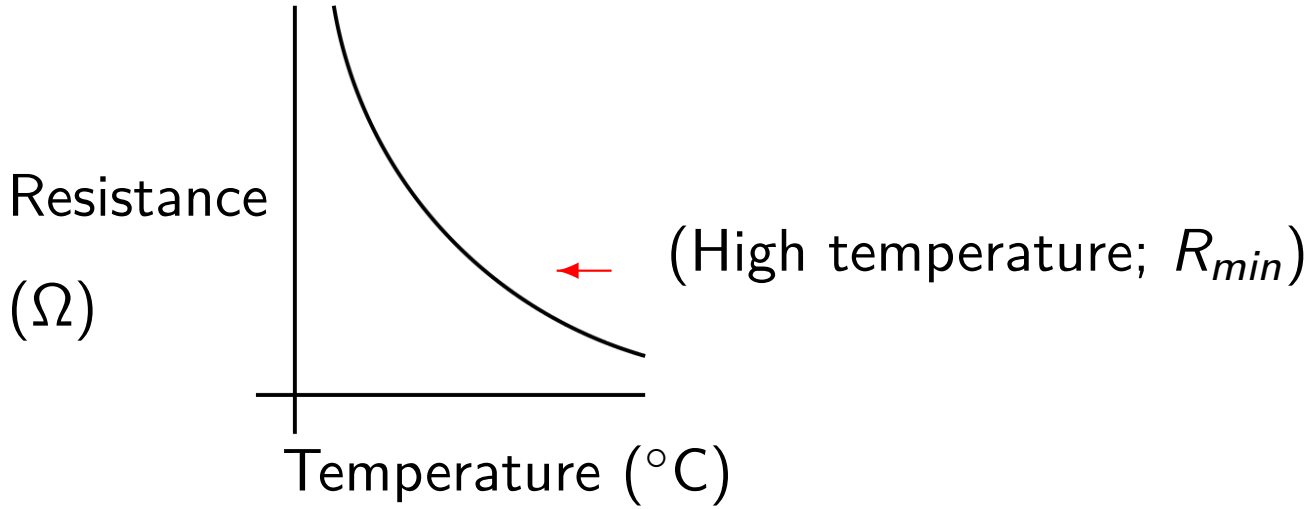

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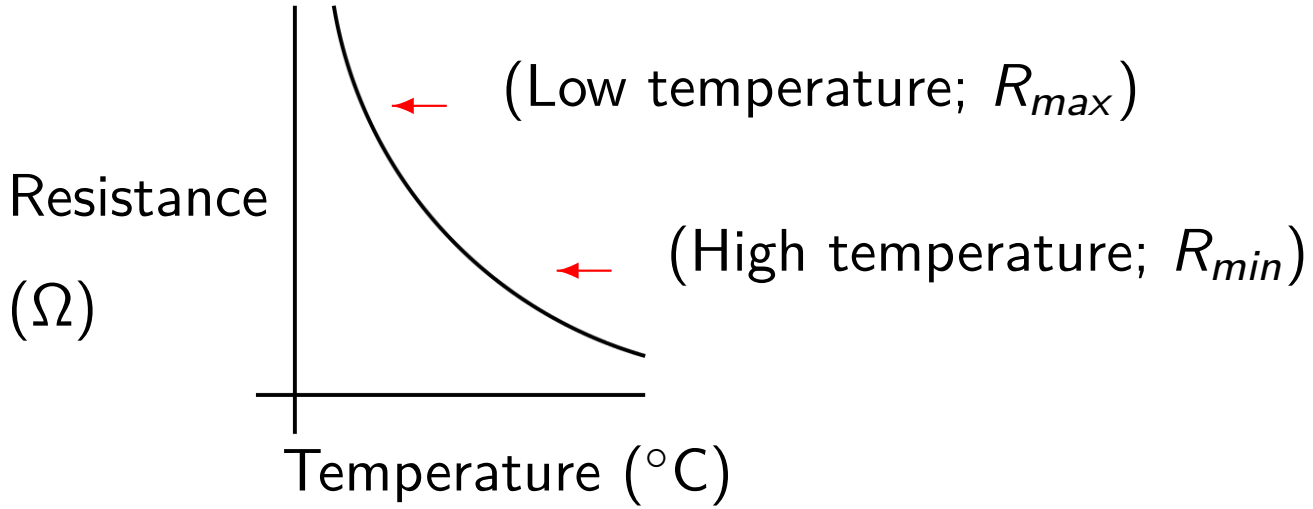
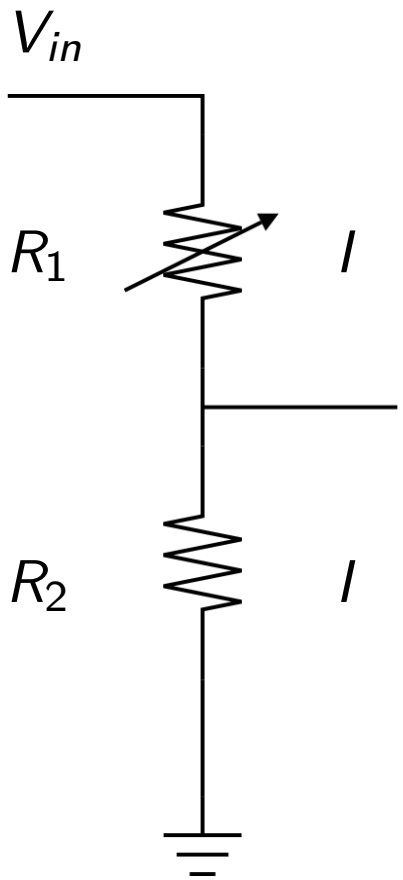


This is the resistance/temperature curve for a thermistor.

Resistive sensors in voltage dividers



$$V_{out} = V_{in}\left(\frac{R_2}{R_1+R_2}\right)$$

True if $I_{out} \equiv 0$

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  $R = \sqrt{R_{min} \times R_{max}}$