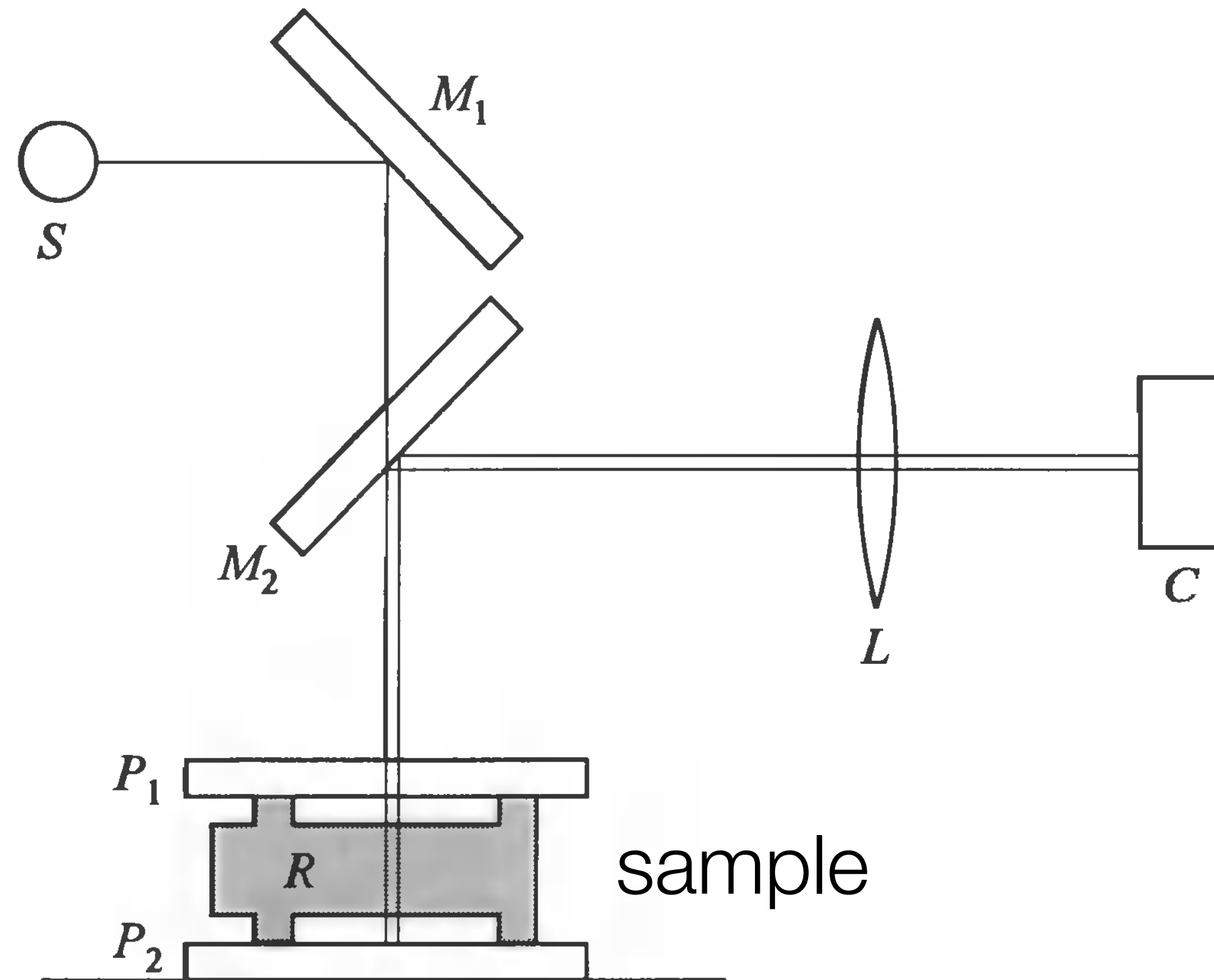


# Measuring the change in volume with temperature, $\beta_p$ , in solids

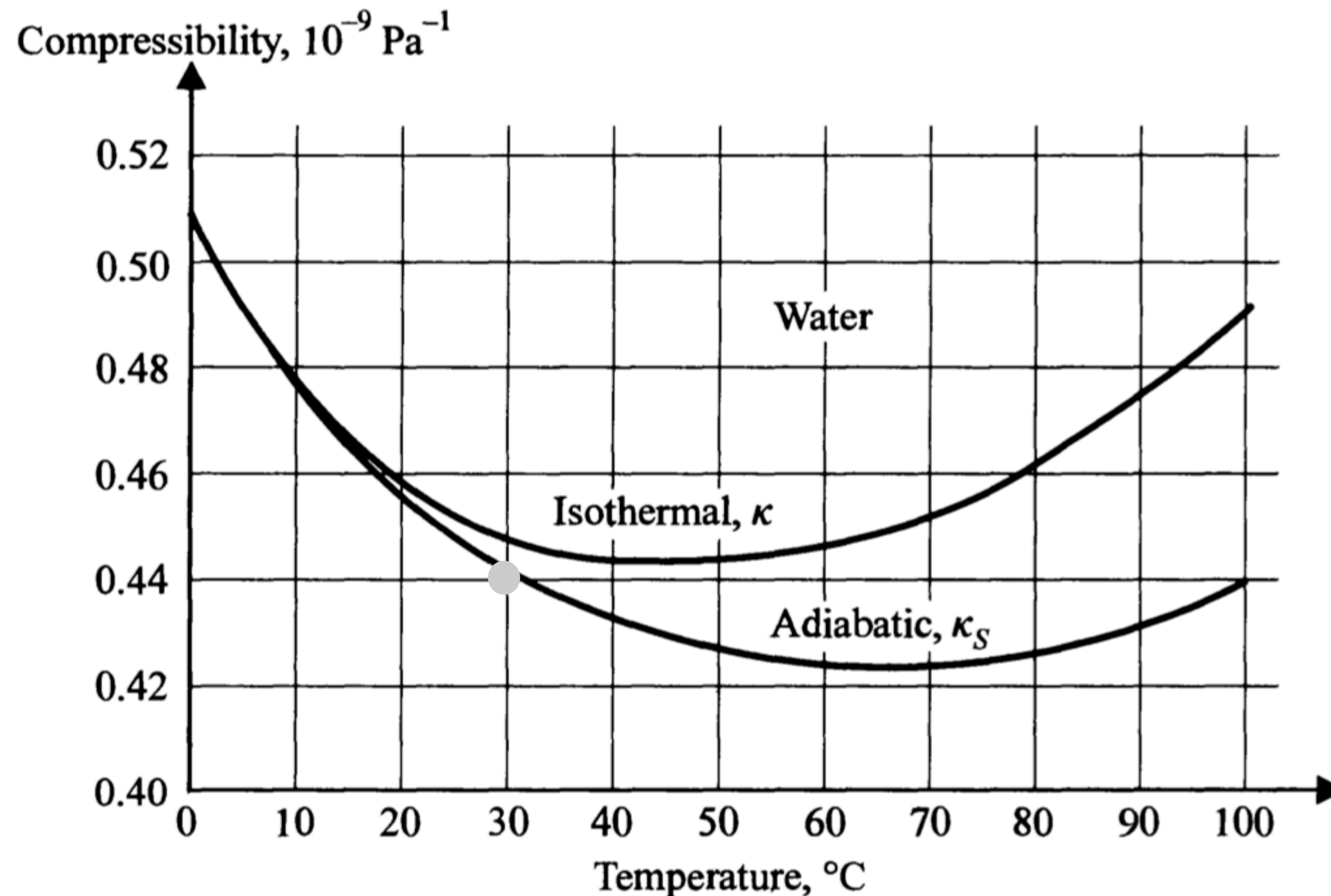
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$$\beta_p = \frac{1}{V} \left( \frac{\partial V}{\partial T} \right)_p$$

As the system expands can measure how the interference pattern changes

# Isothermal Compressibility of Water and Sound Speed



The speed of sound is related to these curves

$$c_s = \sqrt{\frac{B_s}{\rho}} = \sqrt{\frac{1}{\rho \kappa_S}}$$

For water  $\rho = 1 \text{ g/cm}^3$  and

$$c_s \simeq 1500 \text{ m/s}$$

at 30 degrees celsius