SS 2023

MVCMP-1

















Temperature T / K











Geometry of setup:

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 $4 \times 4 \ \mu m^3$ island with gold resistors as heaters and thermometers

minimal width of bridge w < 200 nm

Quantized of Heat Conduction: Sample Geometry



for given geometry

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 $N_i = 4 \times 4 \text{ legs} = 16$ modes: 1 longitudinal (dilatation) 1 torsional 2 bending

$$G_0 = (9.456 \times 10^{-13} \,\mathrm{W \, K^{-2}}) \,T$$

transition roughly at 0.8 K /
$$T_{\rm crossover} \approx {h \nu \over 2 w k_{\rm B}} \approx 0.8 \, {\rm K}$$

expected for:

$$q_{
m th}pprox k_{
m B}T/(\hbar v) < {\it \Delta}q = {\pi\over w}$$



spacing between lowest lying modes