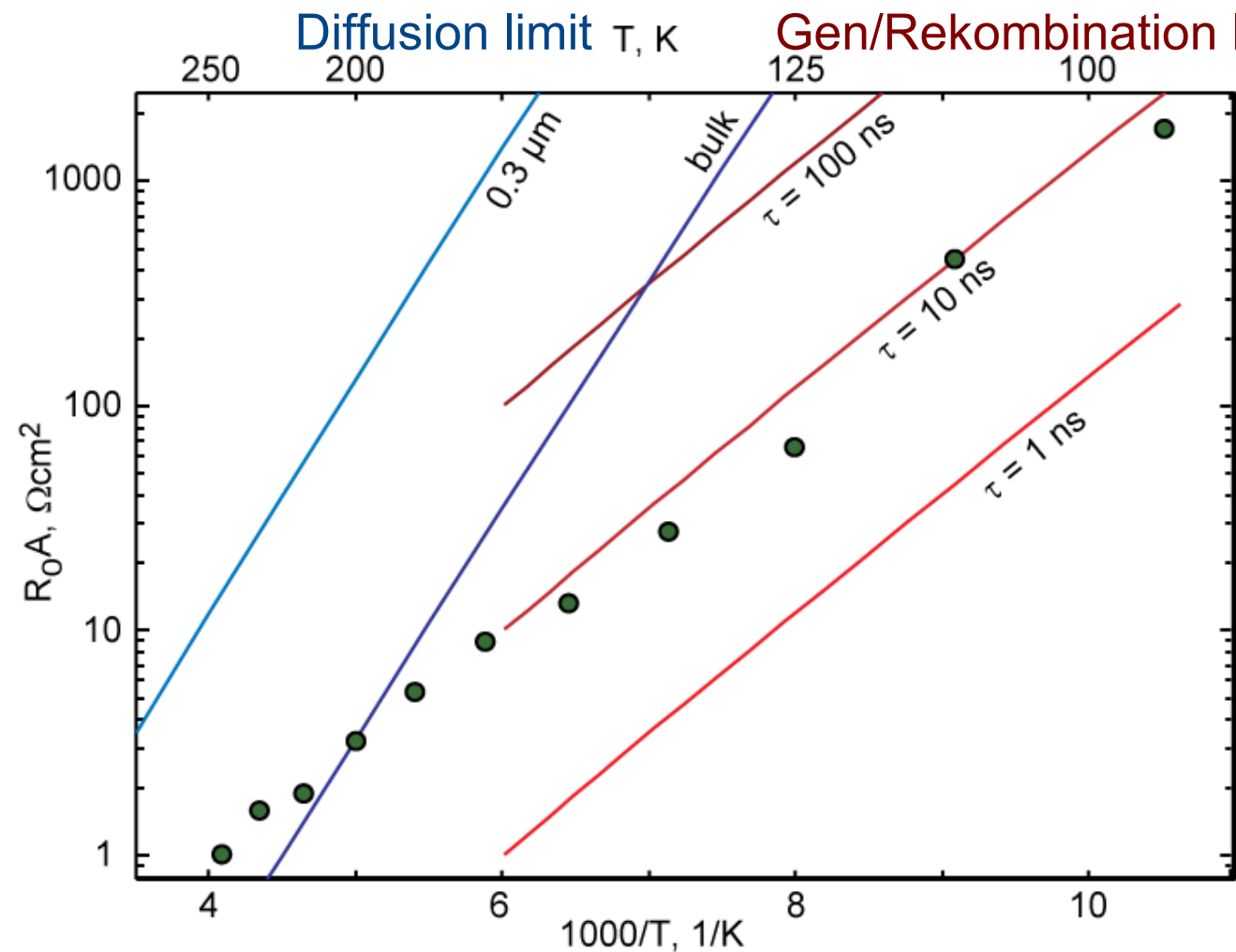


Sensitivity of thin photodiodes



pn⁺ heterojunction:

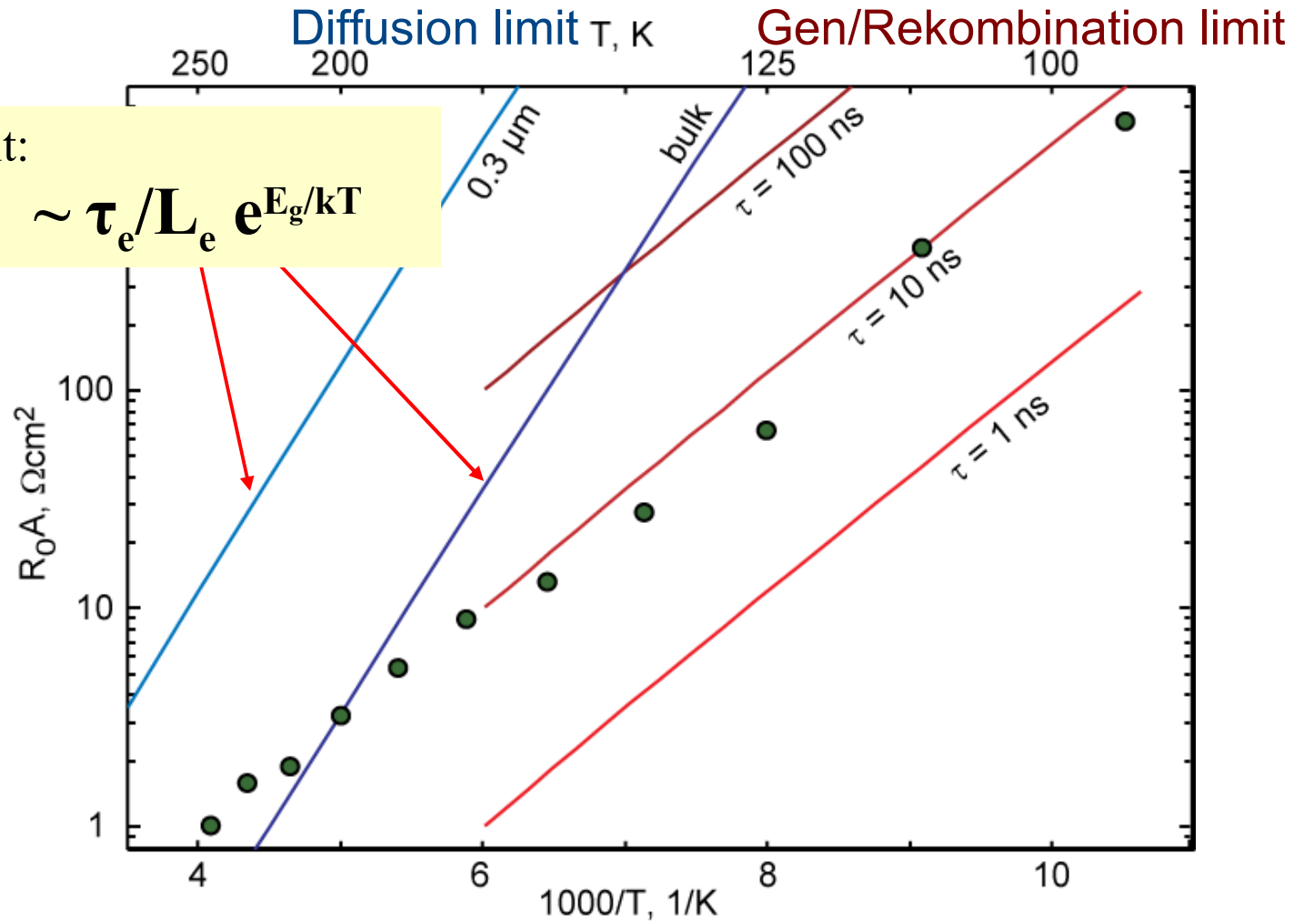
- p-PbTe
 - n⁺-PbSrTe:Bi
- ~ 0.3 μm thin

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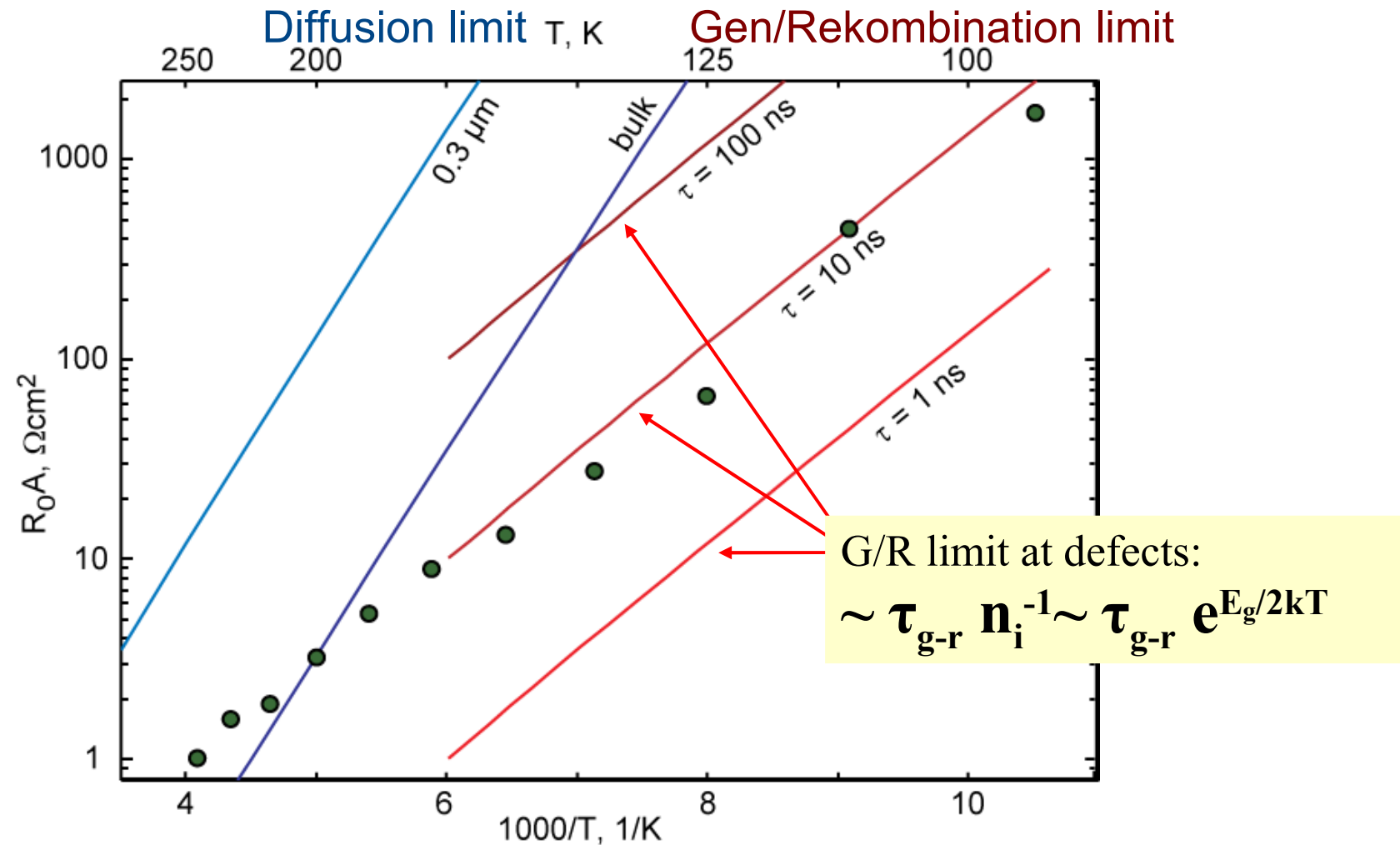
Sensitivity of thin photodiodes

Diffusion limit:

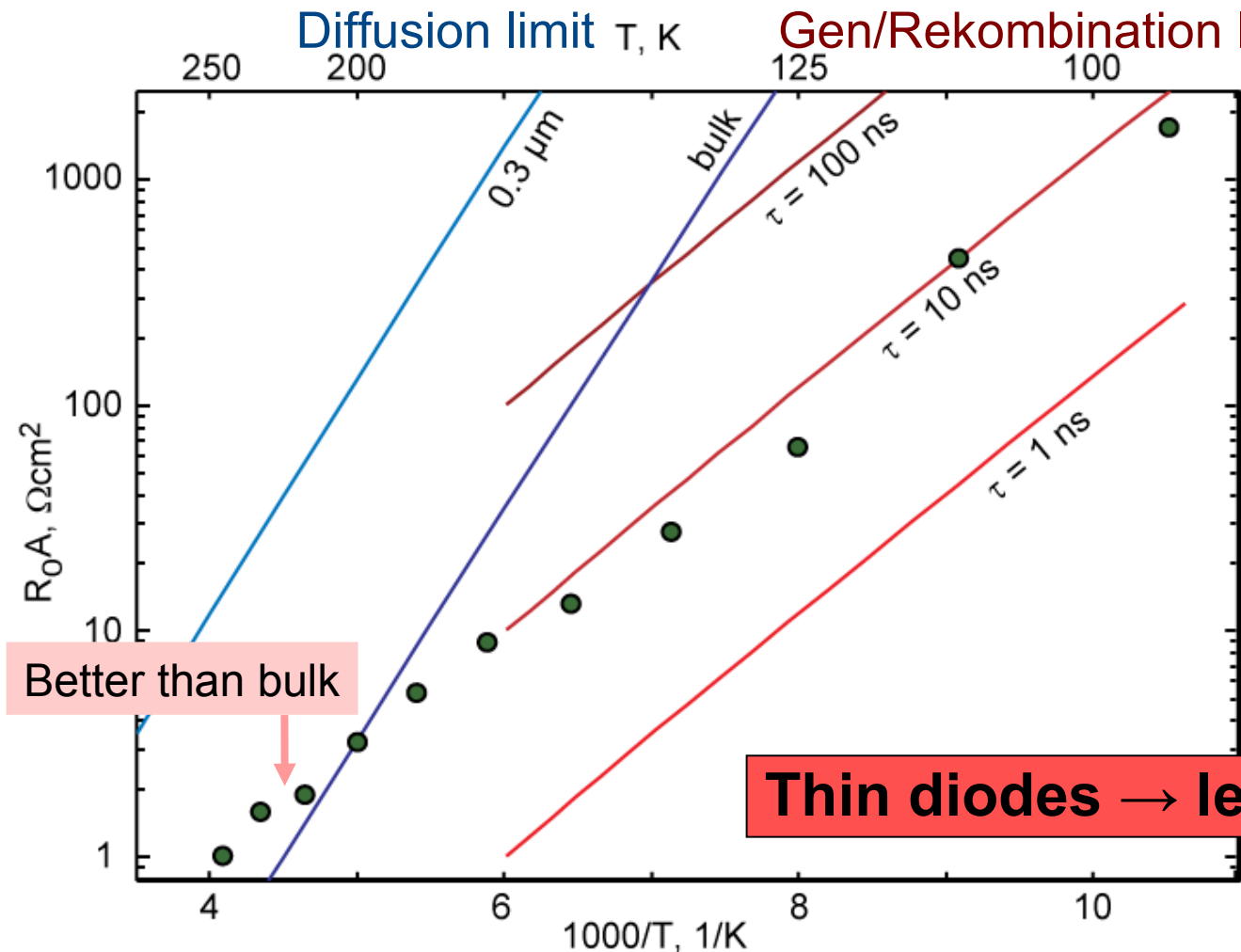
$$\sim \tau_e / L_e n_i^{-2} \sim \tau_e / L_e e^{E_g/kT}$$



Sensitivity of thin photodiodes



Sensitivity of thin photodiodes



PbTe-PbSrTe:Bi
 $\sim 0.3 \mu\text{m}$ thin

Ideality factor:
 $n^* = 1$ (high T)
 $n^* = 2$ (low T)

Bulk diodes
 typical: $\tau_{g-r} < 1 \text{ ns}$

Thin diodes → less noise

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