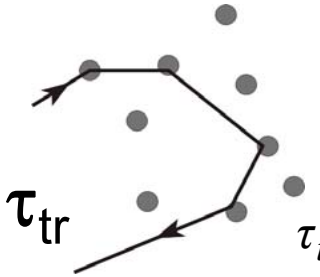
Is the scattering mechanism fully understood on Graphene ?

How can be measured ?

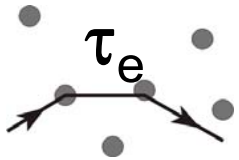
Definition of scattering times



time to be backscattered

$$\tau_{tr}^{-1} = \int_0^{\pi} \mathscr{P}(\theta)(1-\cos(\theta))d\theta$$

influence transport



time to be scattered (in any direction)

$$\tau_e^{-1} = \int_0^{\pi} \mathscr{P}(\theta)d\theta$$

lifetime of an electronic state

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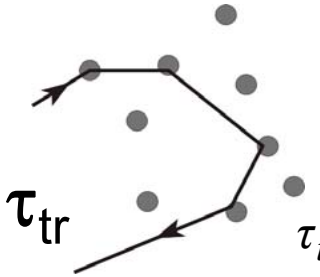
Definition of scattering times



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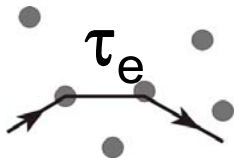

time to be scattered (in any direction)

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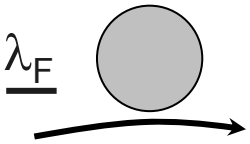
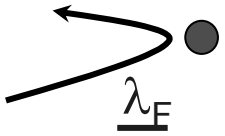
lifetime of an electronic state

What information have these scattering times ?

$\tau_e << \tau_{tr}$ ⟶ long range



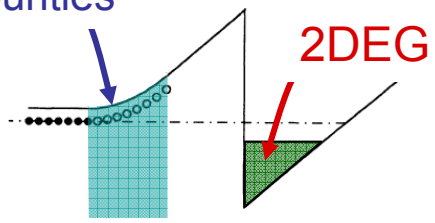
$\tau_e \sim \tau_{tr}$ ⟶ short range



example in 2DEG :

Remote charged impurities

$\tau_{tr}/\tau_e \sim 10$



τ_{tr} / τ_e ratio can identify the scattering mechanism

What is in the Poster downstairs ?

- Measurements of τ_{tr} / τ_e ratio for monolayer and bilayer graphene

- The same scattering mechanism can describe both monolayer and bilayer scattering times

Magnetotransport as probe of impurity scattering on single and bilayer graphene

Miguel Monteverde, C. Ojeda Aristizabal, R. Weil, M. Ferrier, S. Gueron, H. Bouchiat, J.N. Fuchs and D. Maslov

You are welcome to discuss about it !