

## **Homework Assignment for Bulk Monte Carlo Lab: Scattering Rates for Parabolic vs. Non-Parabolic Bands**

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Log in to the Bulk Monte Carlo Lab. Keep all the parameters at their default values and only vary the non-parabolicity factor of the bands  $\alpha$  (0 and 0.5). Plot all the scattering mechanisms taken into account for both parabolic ( $\alpha = 0$ ) and non-parabolic ( $\alpha=0.5$ ) bands. Comment on:

- The magnitude of each scattering mechanism taken into account for both parabolic and non-parabolic bands
- Comment which scattering mechanisms are mostly affected by the bandstructure and explain why?
- Up to what energies the parabolic band approximation is a good approximation?