

# Graphene and emerging physics

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In a monolayer graphite sheet or graphene, experimentally realized quite recently [1], electronic states are described by the relativistic Dirac equation with vanishing rest mass [2,3]. The system has a topological singularity at the origin of the wave vector ( $\mathbf{k}=0$ ), giving rise to nontrivial Berry's phase when  $\mathbf{k}$  is rotated around the origin [4]. Further, the system exhibits an interesting symmetry crossover due to the real time reversal operation involving different  $\mathbf{k}$  points and the special time reversal operation within each  $\mathbf{k}$  points in the first Brillouin zone [5]. The purpose of this talk is to discuss various new physics and exciting phenomena associated with the exotic nature of the electron motion in this system.

## References

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