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Optical Conductivity and quasiparticle properties of Bilayer graphene YAFIS BARLAS, KUN YANG, NHMFL, Tallahassee, FL — The low energy properties of Bernal stacked bilayer graphene can be adequately described by chiral quasiparticles exhibiting a Berry phase of 2π with a parabolic dispersion. When the Fermi energy lies at the neutrality point the Fermi surface consists of a pair of points where dominant inter-band excitations determine the effect on electronic correlations. The particle-hole continuum due to the inter-band excitations is given by $\Omega > q^2/(4m)$ in frequency-momentum space. The full wavevector and frequency dependent polarization bubble and optical conductivity is calculated within the RPA. We also calculate the quasiparticle properties for short-ranged interactions and comment on the breakdown of Fermi liquid theory.

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