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2d electronic gas properties of epitaxial graphene CLAIRE BERGER, GATECH / CNRS, CECILE NAUD, CNRS, ZHIMIN SONG, GATECH, XUEBIN LI, GATECH, WALT DE HEER, GATECH — We present transport measurement on multi-layered epitaxial graphene grown on SiC. The films, a few to a few dozen layers thick, can be lithographically patterned and show remarkable 2d electron gas properties. In high mobility samples (up to 10^4 cm^2/Vs) perpendicular magnetoresistance measurements indicate micrometer long electronic phase coherence lengths at 4K, comparable to the sample size. Pronounced Shubnikov –de Haas oscillations are consistent with graphene-like electronic dispersion relation. A novel low temperature electronic phase transition was also observed. Most recent development of his ongoing research will be presented.

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