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**Magnetic Moment Formation in Hydrogenated and Defected Graphene** KATHLEEN MCCREARY, ADRIAN SWARTZ, WEI HAN, ROLAND KAWAKAMI, University of California, Riverside — Recent experimental observations of magnetic moment formation and magnetic ordering in graphene and graphite have excited both theorists and experimentalists. Magnetic ordering in carbon based materials would provide an alternate material to the conventional d and f metals employed in current technologies and could contribute to new applications in nanotechnology, spintronics, medicine, and telecommunications. While still a young and controversial field, previous experimental and theoretical works suggest the presence of magnetic moments in carbon materials is attributed to impurities, boundaries, reduced dimensionality, or defects. In this study, we perform spin transport measurements on graphene devices in order to investigate magnetic moment formation in doped graphene. The graphene surface is modified inside an ultrahigh vacuum chamber through a variety of methods including hydrogen adsorption, Ar sputtering, and molecular beam deposition of transition metals. We observe signatures of paramagnetic moment formation associated with dopants and defects in graphene.

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