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Effect of metal contacts on photocurrents in graphene transistors ROKSANA GOLIZADEH MOJARAD, Purdue University, FENGNIAN XIA, THOMAS MUELLER, MARCUS FREITAG, YU-MING LIN, PHAEDON AVOURIS, IBM Thomas J. Watson Research Centre — We present theoretical explanation of photocurrent in graphene and investigate the effect of contact induced states on in-plan electric field in graphene. Contact induced states are similar to the well-known metal induced gap states (MIGS) in metal-semiconductor Schottky junctions, which typically penetrate a few atomic lengths into the semiconductor, while the depth of penetration decreases with increasing band gap. However, in graphene we find that these states penetrate a much longer distance of the order of the width of the contacts.

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