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**Position dependent photodetection of graphene field effect transistors** BIDDUT SARKER, Purdue University, EDWARD CAZALAS, Pennsylvania State University, ISAAC CHILDRES, Purdue University, IGOR JOVANOVIĆ, Pennsylvania State University, YONG CHEN, Purdue University — The extraordinary optical and electronic properties of graphene make it a promising component of high-performance photodetectors. Most graphene photodetectors studied so far require light illumination either on the graphene or at the graphene/metal interface. In this talk, we report a study of the spatial dependence of photoresponse in back-gated graphene field effect transistors (GFET) on undoped semiconductor substrates by scanning a focused laser spot across and away from the GFETs. We find that the photocurrent and photoresponsivity can be varied by a few orders of magnitude depending on the laser illumination position. Our observation can be explained using a numerical model based on the charge transport of photoexcited carriers in the substrate. This work may enable position sensitive photodetectors and further developments of graphene-based optoelectronic devices.

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