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Photocurrent-induced transport of exciton energy in a single heterojunction quantum well PATRICK FOLKES, Army Research Laboratory, YINGMEI LIU[1], University of Pittsburgh — Excitons which coexist with a degenerate two-dimensional electron gas (2DEG) in the same quantum well subband have been observed in the photoluminescence (PL) from the recombination of electrons with localized photoexcited holes. Under pulsed photoexcitation at a critical applied voltage, the screening response of the 2DEG/exciton system to the appearance of a remote photocurrent filament in the 2DEG results in the existence of spatially direct and red-shifted indirect excitons in the photoexcitation region and the anomalously fast formation of in-plane spatially indirect excitons which are localized around the filament. Our data suggests the occurrence of a fast long range transport of exciton energy.

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