

Abstract Submitted  
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**Electron diffusivity above and below the Curie temperature of GaMnAs** CHRIS WEBER, KASSIE MATTIA, ERIC KITTLAUS, Santa Clara University, XINYU LIU, JACEK FURDYNA, University of Notre Dame — Using a transient-grating pump-probe experiment, we measure the diffusion of photoexcited electrons in samples of (Ga,Mn)As with doping levels of 5%, 6%, and 7% Mn. At both 15 K and 80 K the diffusivity increases with density of photoexcited carriers, indicating the degeneracy of both majority holes and minority electrons. We measure electron diffusion in (Ga,Mn)As as rapid as  $\sim 100 \text{ cm}^2/\text{s}$ . Converting diffusivity to mobility using the Einstein relation yields  $\mu_e \sim 8000 \text{ cm}^2/\text{Vs}$ , similar to that of GaAs. This high mobility demonstrates that neither the density of states nor the scattering rate of the (Ga,Mn)As conduction band is significantly influenced by Mn doping or by ferromagnetism.

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