

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Biexciton formation in monolayer MoS₂ as observed by transient absorption spectroscopy EDBERT J. SIE, MIT, YI-HSIEN LEE, National Tsing-Hua University, Taiwan, ALEX J. FRENZEL, JING KONG, NUH GEDIK, MIT — We report on the observation of biexcitons and heterobiexcitons in monolayer MoS₂ measured using optical pump and probe spectroscopy. The binding energies of these biexcitons were found to be as large as 35 meV and 60 meV, respectively. This renders the four-particle, or even higher-order, electronic correlations stable against thermal fluctuations at room temperature. These results could serve as a guide for first-principle calculations of high-order electronic correlations in 2D atomic crystals, and to facilitate further investigation toward device applications.

Edbert Jarvis Sie
Massachusetts Inst of Tech-MIT

Date submitted: 15 Nov 2013

Electronic form version 1.4