

Abstract Submitted  
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**A Diode Laser System for the Trapping of Fermionic  ${}^6\text{Li}$** <sup>1</sup> C. WELFORD, D. DRIES, M. JUNKER, J. HITCHCOCK, Y.P. CHEN, R.G. HULET, Rice University Physics and Astronomy Department — We have built an all-diode system for confining  ${}^6\text{Li}$  in a MOT. A single 45 mW Mitsubishi diode in an extended cavity is locked to the  $2\ {}^2\text{S}_{1/2}, F = \frac{3}{2} \leftrightarrow 2\ {}^2\text{P}_{3/2}, F = \frac{5}{2}$  transition (D2) and seeds a 45 mW slave which provides the trapping light. Two additional 45 mW master-slave pairs which are frequency offset locked to the first laser provide the repump (on the D1 transition) and Zeeman slowing light. This laser system has been added to our existing apparatus which now produces BECs of  ${}^7\text{Li}$ . Evaporation of the bosonic  ${}^7\text{Li}$  sympathetically cools the  ${}^6\text{Li}$  in a magnetic trap, prior to transfer to an optical trap/lattice. This system will allow us to simulate quantum many-body phenomena that arise in condensed matter systems.

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