1035-57-1401 **Michael J. Williams*** (mikew@math.ucdavis.edu), Mathematical Sciences Building, University of California, One Shields Ave, Davis, CA 95616. *Lens space surgeries and tunnel number one knots.*

In the 1990's John Berge showed that a certain class of tunnel number one knots in the 3-sphere, called double primitive knots, admit lens space surgeries. Then Cameron McA. Gordon conjectured that if a knot in the 3-sphere admits a lens space surgery, then that knot is double primitive. I will discuss an approach to proving this conjecture for all tunnel number one knots in terms of genus 2 Heegaard splittings. With this approach, there are three cases. I will discuss the proof in two of the cases. (Received September 19, 2007)