Abstract Submitted
for the TSS12 Meeting of
The American Physical Society

The stability of the suggested planet in the ν Octantis system: a numerical and statistical study[1] BILLY QUARLES, MANFRED CUNTZ, ZDZISLAW MUSIELAK, University of Texas at Arlington — Exoplanets in binary systems have received heightened interest by the scientific community. Especially with the recent detection of a circumbinary planet of Kepler-16b (Doyle et al. 2011)[Science 333, 1602] planets in binary systems have warranted second and even third glances. The system of ν Octantis has been a system of great controversy since the suggested planet in this system (Ramm et al. 2009)[MNRAS 394, 1695] appears to be located beyond its theoretical stability limit. In order to resolve this controversy we seek to determine whether the proposed planet can exist in the context of current stability theory. We have performed detailed simulations by exploiting the uncertainty measurements to determine the short and long-term stability of a prograde starting configuration. However to follow up on the previous results by Eberle & Cuntz (2010)[ApJ 721, L168], we have investigated the hypothesis of a retrograde orbit in more detail by considering a larger set of possible initial conditions to determine the possibility of a retrograde configuration with respect to the motion of the binary system. We will show that a retrograde configuration is preferred by both stability considerations with respect to the maximum Lyapunov exponent and numerical statistical considerations.

[1]This work has been supported by the U.S. Department of Education under GAANN Grant No. P200A090284 (B. Q.), the SETI institute (M. C.) and the Alexander von Humboldt Foundation (Z. E. M.).

Billy Quarles
University of Texas at Arlington

Date submitted: 07 Feb 2012 Electronic form version 1.4