1106-70-666 **Skyler C. Simmons*** (`xinkaisen@gmail.com`) and **Lennard F. Bakker** (`bakker@mathematics.byu.edu`). *A Separating Surface for the Generalized Sitnikov Problem.*

We consider the a generalization of the Sitnikov problem of Newtonian mechanics. For a periodic, planar configuration of n bodies which is symmetric under rotation by a fixed angle, the z-axis is invariant. We consider the effect of placing a massless particle on the z-axis. The study of the motion of this particle can then be modeled as a time-dependent Hamiltonian System. We give a geometric construction of a surface in phase space separating orbits for which the massless particle escapes to infinity from those for which it does not. The construction is demonstrated numerically in a few examples. (Received September 04, 2014)