

1046-85-1818 **Skyler C. Simmons*** (xinkaisen@yahoo.com), 292 TMCB, Brigham Young University, Provo, UT 84602, and **Duokui Yan** and **Tiancheng Ouyang**. *A new family of periodic orbits with singularities in the 2D n-body problem.*

Singularities of the n-body problem in celestial mechanics have been studied for many years. Important results include the transformations given by Sudman, Siegel and Moser for binary collision and McGehee for triple collision. More recently, Yan has studied the simultaneous binary collision problem in one dimension. Here, we consider orbits of even numbers of bodies in the n-body problem. A method for constructing periodic orbits of n bodies is given. A key feature of these orbits is multiple simultaneous binary collision. (Received September 16, 2008)