1135-70-1086 **Wentian Kuang**, **Tiancheng Ouyang** and **Zhifu Xie*** (zhifu.xie@usm.edu), Department of Mathematics, The University of Southern Mississippi, 118 College Drive, #5045, Hattiesburg, MS 39406, and **Duokui Yan**. *The Broucke-Hénon orbit and the Schubart orbit in the planar three-body problem with equal masses.*

Variational Method with Structural Prescribed Boundary Conditions (SPBC) is applied to study periodic solutions in the 3-body problem with equal masses. We show that under an appropriate topological constraint, the action minimizer must be either the Schubart orbit or the Broucke-Hénon orbit. One of the main challenges is to prove that the Schubart orbit coincides with the action minimizer connecting a collinear configuration with a binary collision and an isosceles configuration which must be collinear. A geometric property of the action minimizer is introduced to overcome this challenge. The action minimizer without collisions can be extended to the Broucke-Hénon orbit. (Received September 19, 2017)