

1075-37-39

Zhifu Xie*, Department of Mathematics & Computer Science, P.O. Box 9068, Virginia State University, Chester, VA 23806. *Golden Ratio and Super Central Configurations of N -body Problem.*

A new phenomenon on central configurations was discovered in the collinear three-body problem and in the collinear four-body problem. There exists a configuration that is a central configuration for at least two different arrangements of a given mass vector. Such central configuration is called the super central configuration in the n -body problem and it may lead some surprising dynamical behaviors. Super central configurations do not exist in the planar four-body problem. The existence and classifications of super central configuration in the collinear cases are also very important for counting the number of central configurations under different equivalent classes. Remarkably the existence of super central configurations in general homogeneous potential has a relation to the Mathematical Beauty- Golden Ratio. (Received August 13, 2011)