Petrozavodsk State University St.-Petersburg State University

STRUCTURE AND EVOLUTION OF STELLAR SYSTEMS

(Abstracts of the Conference)

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ON THE STABILITY OF SOME PHASE MODELS WITH QUADRATIC POTENTIAL

A. Vshivtsev, B. Kondratyev

One of the central and complicated problems we are faced with now is to study a stability of known phase models of stellar systems. We propose a new method for investigation of the stability in all set of the models of ellipsoidal stellar systems with respect to ellipsoid - ellipsoid small perturbation. The basic computational strategy of the method is use of the phase invariants for these models. The method has been tested against the cases previously considered by other ones.

STABILITY OF MOTION IN POTENTIAL ARISING FROM DISK AND TRIAXIAL HALO CONTRIBUTIONS

A. El-Zant

Recent results concerning the stability of orbits in a potential arising from triaxial halo and thin axisymmetric disk are revued. It is found that dissipative perurbations drive loop orbits in the inner parts to spiral towards the center thus creating a central mass concentration. The presence of a central mass destabilizes most box orbits and the more eccentric loop orbits in the plane of the disk up to a few core radii of the halo. This instability is enhanced by the presence of the disk and exists both in the plane and verticaly where orbits once confined to the disk now venture up a few kpc above it. These orbits are chaotic (have a positive numerical Liapunov exponent) and form an ellipsoidal density distribution.

The above processes would probaly lead to global loss of triaxiality in the halo. It is not clear however if there could be significant vertical scattering of stars formed on eccentric orbits in the early evolution of the disk thus forming bulge like or thick disk structures before there is total loss of triaxiality or what effect the latter process would have upon the stability of a disk.

67