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Nonlinear stability of stationary spherically symmetric models in stellar dynamics. (English)

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The author considers a system of particles in the three dimensional space without any collision among them. The system can be described by distribution functions $f(x,v,t)$ satisfying the Vlasov equation and the Poisson law. Then f_0 , for which $\partial f/\partial t = 0$, is nonlinearly stable under some conditions, and is spherically symmetric if $f(x,v) = f(Sx, Sv)$ with any rotation S .

The author proves that under an appropriate condition of the state f_0 , f_0 is nonlinearly stable subject to general perturbations and that under a regularity condition, f_0 is nonlinearly stable subject to spherically symmetric perturbations.

Reviewer: [Y.Kozai \(Tokyo\)](#)

MSC:

70F15 Celestial mechanics
85A05 Galactic and stellar dynamics

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Keywords:

system of particles; Vlasov equation; Poisson law; perturbations; regularity condition; spherically symmetric perturbations

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