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Title: *“Instability of all closed orbits obtained by symmetric minimization”*

Abstract. We study the dynamics around closed orbits of autonomous lagrangian systems having an involutory symmetry. Our main result states that if a symmetric orbit minimizes the free-period action functional, then it must be orbitally unstable. This applies to possibly degenerate, or even nonisolated minimizers; in the nondegenerate case, minimizers must be hyperbolic. Furthermore, no symmetries are needed in the special case of the configuration manifold being an orientable surface. Applications to geodesics and Celestial Mechanics are given.