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Michael Usher* (usher@math.uga.edu). *Aperiodic symplectic manifolds.*

We describe a general construction which, on a very diverse family of closed manifolds, gives rise to symplectic forms that admit Hamiltonian flows with no nontrivial periodic orbits. In particular, our family includes many of the classic examples of interesting symplectic four-manifolds with $b^+ > 1$. This contrasts with a result of Lu which, when combined with results from Taubes-Seiberg-Witten theory, shows that such symplectic forms can never exist on manifolds with $b^+ = 1$. All this suggests a number of open questions, some of which we will discuss. (Received January 15, 2011)