

On the error term of the Prime Orbit Theorem for expanding semi-flows

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Abstract:

We consider suspension semiflows of angle multiplying maps on the circle and study the distributions of periods of their periodic orbits. Under generic conditions on the roof function, we give an asymptotic formula on the number $\pi(T)$ of prime periodic orbits with period $\leq T$. The error term is bounded, at least, by

$$\exp\left(\left(1 - \frac{1}{4\lceil \chi_{\max}/h_{\text{top}} \rceil + \varepsilon}\right) h_{\text{top}} \cdot T\right) \quad \text{in the limit } T \rightarrow \infty$$

For arbitrarily small $\varepsilon > 0$, where h_{top} and χ_{\max} are respectively the topological entropy and the maximal Lyapunov exponent of the semiflow.