ABSTRACT:
Evolutionary equations very often do not have the property that solutions are differentiable in time. However, the solutions that lie on compact invariant can be smooth. Conditions are given for which this is true. When the evolutionary equation corresponds to a PDE and the conditions are satisfied, then we also obtain regularity in space. Applications will be mentioned to the linearly damped wave equation and the damped Schroedinger equation. The proofs use Galerkin methods in a special way.