Title: Semigroups of operators and its orbits

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Abstract: The orbit of a bounded linear operator T on a Banach space is a sequence $T^n x$, $n = 0, 1, 2, \ldots$, where x is a fixed vector. The orbits are closely connected to the dynamics of operator semigroups and to the invariant subspaces and subsets. The thesis studies the relation between the operator and its orbits. The subject of the first part is the relation between sequences $\|T^n x\|$ and $\|T^n\|$, stability and orbits tending to infinity. The second part deals with dense orbits – hypercyclicity and related notions. In the third part, an analogue of reflexive algebras of operators, orbit reflexive operators are defined and studied. Apart from "normal" orbits of a single operator, the weak orbits and orbits of C_0-semigroups are also touched.