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The structure of global attractors for non-autonomous perturbations of discrete gradient-like dynamical systems

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In this talk we give the complete description of the structure of compact global (forward) attractors for non-autonomous perturbations of discrete autonomous gradient-like dynamical systems under the assumption that the original discrete autonomous system has a finite number of hyperbolic stationary solutions. We prove that the perturbed non-autonomous (in particular τ -periodic, quasi-periodic, Bohr almost periodic, almost automorphic, recurrent in the sense of Birkhoff) system has exactly the same number of invariant sections (in particular the perturbed systems has the same number of τ -periodic, quasi-periodic, Bohr almost periodic, almost automorphic, recurrent in the sense of Birkhoff) solutions). It is shown the compact global (forward) attractor of non-autonomous perturbed system coincides with the union of unstable manifolds of this finite number of invariant sections.