

Project studies structural properties of dynamical systems, that is results of iteration of continuous functions. Our main analysis is focused on commonly accepted measures of complexity of structure of orbits (so-called entropy) and mathematical tools helping to decide if an object (e.g. visualized on computer screen) is complicated and simple (these tools are provided by branch of mathematics called topology). First, we will develop techniques allowing us to construct complicated objects. Very important tool in this matter will be (some versions) of shadowing property. Very roughly speaking, shadowing property ensures that results we draw on computer screen reflect reality in the system under investigation. Project aims to provide very deep insight into mathematical aspects of complexity. To reach this aim, we will employ many different advanced mathematical techniques, that originated from topology and ergodic theory, using recent mathematical advances and open problems as starting point of our study.