1026-68-210 **Agnis Skuskovniks*** (agnis.skuskovniks@gmail.com), Universty of Latvia, Raina bulvaris 29, Riga, LV-1459, Latvia. *Descriptive complexity of quantum automata.* Preliminary report.

There are different approaches of trying to solve P=NP or other equivalences of complexity classes. This research shows an approach to this problem using logic and quantum automata.

Connection between descriptive complexity classes and mathematical logic is known. Also languages accepted by different models of quantum automata can be defined using mathematical logic.

We use mathematical logic (least fixed point logic; second order logic, generalized Lindstrom quantifiers, branching logic.) to show connection between quantum automata and descriptive complexity classes.

As the logics describing languages recognized by QFA are shown not to be the same as ones that describe formerly known complexity classes—new complexity classes can be defined. (Received February 27, 2007)