

During last few years we note a number of works on the use of methods of control theory to analyze the performance of computer networks treated as specific dynamical systems. They concerns mainly the problem of stability and then also controllability and observability problems.

Simultaneously, since the end of the twentieth century, a number of results in the area of mathematical models of dynamical systems focused on fractional order calculus have been published.

In this project we plan to use the techniques applied in automatics in the analysis of congestion control mechanisms in Internet. Our recent theoretical and experimental studies conducted recently in IITiS PAN convinced us that fractional order controllers may improve the Internet performance. That is why we intend to work on fractional calculus and fractional order controllers for active queue management in network routers.