ЛАБОРАТОРИЯ
ИНФОРМАЦИОННЫХ
ТЕХНОЛОГИЙ

СЕМИНАР
по ВЫЧИСЛИТЕЛЬНОЙ
И ПРИКЛАДНОЙ
МАТЕМАТИКЕ

Thursday, 17 October 2019, at 15.00
Room 310

Malykh M.D., Sevastianov L.A., Yu Ying
(RUDN University, Moscow)

Algebraic integrals of differential equations and finite difference method

In the talk autonomous systems of differential equations with rational right part will be investigated and the following questions will be considered:

- methods of finding algebraic integrals and integral varieties and implementing them in computer algebra systems (Sage),
- constructing of conservative difference schemes, which preserve exactly integrals or integral varieties and fundamental obstacles for constructing explicit conservative schemes
- organization of calculation based on implicit differential schemes

We will present:

- package for calculation of integral and Darboux polynomial (based on Lagutinski method) in Sage,
- package for Butcher varieties for simple and symplectic Runge-Kutta scheme in Sage,
- results of numerical experiments obtained by applying the midpoint scheme to an investigation study of linear and elliptical oscillators.