
ЛАБОРАТОРИЯ
ИНФОРМАЦИОННЫХ
ТЕХНОЛОГИЙ

СЕМИНАР
по ВЫЧИСЛИТЕЛЬНОЙ
И ПРИКЛАДНОЙ
МАТЕМАТИКЕ

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**Tuesday, 25 June2019, at 11.00**
**Room 310**

**N.D. Dikusar**

## A Tree-Point Grid Based Polynomial Prediction

**In the framework of the basic element method (BEM) a new approach has been proposed for solving the problem of polynomial prediction and extrapolation of the sixth order for smooth functions. The one step (h) forward forecast is performed using two fifth degree polynomials. The formulae for the coefficients of BEM-polynomials depend on the grid step, the values of the function and its first derivatives at the nodes of the three-point grids. The method was tested on the numerical solution of the Cauchy problem for ODE. The efficiency of numerical integration is ensured by a threefold calculation of the right side of the equation and the $O(h^5)$ accuracy of the solution. The BEM-forecast can serve as the core for the development and creation of effective algorithms for numerical solving Cauchy problems for ODEs, including *stiff* ones.**