

**The Explicit Form of Lie Transformations,**  
S.N.ANDRIANOV, SPbSU - This paper presents a method obtaining of explicit forms for Lie transformations which are widely used in particle physics problems. This approach is based on the matrix formalism for Lie algebraic tools and corresponding representations are found in the class of polynomials of phase variables. The closed form of Lie transformations takes into account the intrinsic properties of the Lie transformations, for example, the property of symplecticity for Hamiltonian systems. This approach is realized in the frame of a new paradigm of simulation - dynamical modelling. According to the matrix formalism the basic objects of any expert system are matrices which define both a beamline system and beam aberrations. The necessary calculations are carried out in symbolic form (using computer algebra codes). This representation helps to create systems of oriented graphs for building of necessary knowledge bases. Using such approach we can create desired prototypes of expert systems more simple than by traditional (in basic, numerical) methods.