Dmitry V. Zenkov* (dvzenkov@unity.ncsu.edu), Department of Mathematics, North Carolina State University, 255 Harrelson Hall, Raleigh, NC 27695, and Yuri N. Fedorov. Variational Integrators for Nonholonomic Systems on Lie Groups.

Variational integrators are discrete dynamical systems obtained by discretizing the principle of critical action, rather than discretizing the Euler–Lagrange equations, of a continuous-time mechanical system. In this talk we will introduce variational integrators for nonholonomic systems on Lie groups with left-invariant constraints. Structure-preserving properties of these integrators, such as conservation of momentum and measure, will be discussed. This is joint work with Yuri Fedorov. (Received September 27, 2005)